Name: Vasilios Alexiades

Position: Adjunct Research Participant
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics
Phone: (865) 576-4292
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Education: Ph.D. Applied Mathematics, University of Delaware, 1977
M.S., Mathematics, University of Delaware, 1976
M.S., Mathematics, St. Louis University, St. Louis MO, 1973
B.S., Mathematics, Aristotle University, Thessaloniki, Greece, 1971

Employment 1989-Present: Professor, Mathematics Department, University of TN
1982-Present: Research Staff (part-time), Computer Science & Mathematics Division, ORNL
1983-1988: Associate Professor, Math. Dept., University of TN
1978-1983: Assistant Professor, Math. Dept., University of TN
1977-1978: Instructor, Math. Dept., University of Texas at Austin

Professional Interests: Biomathematics - cellular process modeling
Phase change processes - single and multi-component systems
Heat and mass transfer, direct and inverse problems
Scientific computing, distributed parallel computing

Experience: Linear and nonlinear partial differential equations
Modeling, analysis and simulation of phase-change processes
In Situ Vitrification

Offices held in professional activities:

2001-2003 Member of Steering Committee of South Eastern Atlantic Regional Conference in Differential Equations.
2002 Chair of Steering Committee of South Eastern Atlantic Regional Conference in Differential Equations.

Professional organization activities:

2002 Organizer of 22nd South Eastern Atlantic Regional Conference in Differential Equations, October 10-11, 2002, UTK
1998 Organizer of Trends in Mathematical Physics Conference October 14-17, 1998, University of TN

Name: Glenn O. Allgood

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
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Fax: (865)576-0003
E-mail: allgoodgo@ornl.gov

Education: Ph.D., 1991, (Joint) Engineering Science and Mechanics & Operation Research/Management Science, The University of Tennessee, Knoxville.
Dissertation Topic: "Development of a Neural Net Paradigm that Predicts Simulator Sickness."
M.S., Electrical Engineering, March 1983, The University of Tennessee, Knoxville.
B.S., Electrical Engineering, June 1979, The University of Tennessee, Knoxville and Mathematics, June 1975, DeKalb College, Atlanta, Georgia.

Experience: Current research topics/interest include: (1) the application of advanced methods to encode cognition and anticipatory process linked to human mental reasoning processes, (2) the application of advanced methods to nonlinear processes for optimizing operational performance and graded-response control, (3) the development of economic models and indices as part of control hierarchies and value chain analysis, (4) the development of analytic techniques for DSP, human interfaces, and sensor/data fusion, (5) developing emerging concepts for wireless communications which include architectures, embedded systems, protocols, and (6) biomedical research in select topics.

Other activities include: Adjunct Professor at the University of Tennessee and Member of the Editorial Advisory Board for Sensors Magazine. Consulting for MK Technologies, Knoxville, TN, and 3e Technologies International, Inc. (also known as AEPTEC MicroSystems, Inc.). AMTEX(tm)/Computer-Aided Fabric Evaluation (CAFE) - Laboratory Project Manager and Principal Investigator. DOE Value Chain Analysis for the Steel Industry - Principal Investigator. DOE Wireless Sensor & Embedded Systems Project - Co-Principal Investigator. U.S. Army Inclinometer Study - Co-principal Investigator. Advance Prognostics & Health Assessment - Principal Investigator and Co-Program Developer. Biomedical Research - Principal Investigator. ORNL Chairman for the Seed Money Review Committee. Previous Project Manager and Principal

Investigator for ORNL on Work For Others Program on the Corps

Command Group Vehicle and Future Command and Control Vehicle Projects (2 projects with annual budget FY 1991-92 of $1.5M). Senior Technical Consultant on the Competition in Contracting Act (CICA) Acquisition Expert System (US Army Material Command). Project Manager for the building of the Web Test Bed Facility. Taught select courses (A/I, Expert Systems, etc.) at the University of Tennessee, Knoxville. Control Technology Group Leader - AVLIS Program. Development Engineer - Fossil Fuels Program. Development Engineer/Principal Investigator - Viscometer Project. Development Engineer - Advanced Instrumentation Reflood Studies (AIRS) Program. United States Navy - Honorable Discharge.

Professional Societies:

Adjunct Professor, University of Tennessee
Society for Experimental Mechanics (SEM), member
Instrument Society of America, Senior Member (Automatic Control System and Analytic Instrumentation Groups)
IEEE, Senior Member (Controls System and Machine Intelligence and Pattern Recognition, and Computer Societies)
Operations Research Society of America, Member
Tau Beta Phi Engineering Honor Society
Eta Kappa Nu Electrical Engineering Honor Society
Professional Engineer, State of Tennessee
Member of Sensor Magazine Editorial Advisory Board, 2002/2003

Name: Gustavo A. Aramayo

Position: Senior Research Staff
Laboratory: Oak Ridge National Laboratory
Division: Computer Sciences and Mathematics Division
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E-mail: aramayoga@ornl.gov

Key Skills: Developed mathematical models and conducted impact analysis of weapon component containers, spent fuel casks and passenger vehicles, Mechanical-thermal simulation of Stir-welds, Structural optimization of energy absorbing mechanisms to minimize damage associated with frontal collision of passenger vehicles. disturbance.

Education: B.S. Civil Engineering (structures), University of Alabama at Tuscaloosa, 1963.

M.S. Engineering Mechanics (solid mechanics), University of Alabama at Tuscaloosa, 1964.

Ph.D. Engineering Mechanics (dynamics and vibrations), University of Alabama at Huntsville, 1967-1973.

Affiliations: Membership in: American Society of Civil Engineers; Materials-Metals Society; Structural Engineers Institute; Sigma Chi (scientific organization); Tau Beta Pi (engineering organization); Chi Epsilon (civil engineering organization); Pi Mu Epsilon (mathematics organization); and the Porsche Club of America.

Name: Mark W. Arnold

Position: Software Developer
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Group: Computer Systems and Operations, HPSS Development
Phone: (865) 241-6649
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Email: arnoldmw@ornl.gov

Key Skills: Software Design (C, UNIX, Microsoft) Relational Database Systems development, software and administration (Oracle, DB2), UNIX systems administration

Education: B.A. in Computer Science, University of Tennessee, Knoxville 1984

Experience: Mark Arnold is currently involved in software development for the HPSS project. His duties include design, development and modification of the Storage Systems Management SM server for HPSS 5.1. Additionally, he participates in the design and review of the HPSS relational database migration effort.

In the past, Mr. Arnold has developed software for:

- Structural steel connection and fabrication design
- Process and factory control automation
- Relational database design and applications
- Process control alarm management system
- Petrochemical tank farm automation
- Pioneering effort on medical reference and information system for physicians leading to the creation of popular medical web site
- Large database warehouse design and application development
- Process hazard analysis system for major US chemical manufacturer

Mr. Arnold has also participated in the establishment and administration of the original ORNL HPSS production system. He was also instrumental in the establishment of the HPSS Users Group in 1997 holding the very fist meeting of the group at ORNL.

Name: Stan Attenberger, Ph.D.

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
Phone: (865)241-5929
Fax: (865)241-6261
Email: attenbergese@ornl.gov

Key Skills: Computational Modeling
Business-related Web Applications

Education: Ph.D., High Energy Physics, Cornell University (1974)

Experience: Dr. Attenberger has a wide range of technical experience. From 1974 to 1996, he was involved in plasma physics research, primarily in computational modeling of plasma transport in tokamaks. During that time, he spent a year at the Joint European Tokamak Laboratory near Oxford, England, where he had primary responsibility for operating and maintaining both hardware and software for the Oak Ridge Pellet Injector, a device that injected frozen deuterium pellets into tokamak plasma. He also spent five months at the French National Laboratory of Cadarache, where he collaborated on modeling edge physics in the Tore Supra tokamak.

From 1996 to 1998, Dr. Attenberger developed business-related web applications for the Oak Ridge National Laboratory (ORNL). He was the main author of the first release of the ORNL Conference Room Scheduler and of the visitor badge request web site. Both of these projects required reaching a consensus with a large group of people, and both applications are still in use. He also developed a sophisticated Java applet for displaying gene locations on mouse chromosomes.

In 1998, Dr. Attenberger began working with the ORNL Distributed Active Archive Center, which acquires and archives NASA and other environmental data. This work uses state-of-the-art programming techniques to help environmental researchers communicate relating to their work and find data of interest to their project. Dr. Attenberger is the primary author of the ORNL Metadata Editor (OME), a CGI application which is accessible at web sites in the U.S., Brazil, and South Africa, and which runs on both unix and windows servers. OME is used by at least nine different projects and by hundreds of researchers in many countries.

During his involvement in plasma physics, Dr. Attenberger authored and co-authored many publications, including 33 articles in refereed journals.

Name: Jacob Barhen

Position: Complex Systems Group Leader; Center for Engineering Science Advanced Research Director
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Neural Networks, Global Optimization, Emerging Computational Systems, Optical Information Processing.

Education: D. Sc., Nuclear Engineering, Technion – Israel Institute of Tech. (1978)
M. Sc., Nuclear Engineering, Technion – Israel Institute of Tech. (1975)

Professional Experience:

10/2001-Present **Manager**, CESAR Programs, Computing and Computational Science Directorate, Oak Ridge National Laboratory

03/1999-Present **Corporate Fellow**, UT – Battelle, LLC and ORNL

1997-2001 **Head**, Intelligent and Emerging Computational Systems Section, Computer Science and Mathematics Division

1994-Present **Director**, Center for Engineering Science Advanced Research (CESAR), ORNL. In 1983, the Department of Energy (DOE) established CESAR at the ORNL. Its primary mission was to conduct fundamental theoretical, experimental, and computational research in intelligent systems. Over the past decade, the Center has experienced tremendous growth. Today, its activities range from programmed materials synthesis at the nanoscale to cooperative mobile robots, from quantum optics to directed energy weapons, from neural networks to global optimization, and from revolutionary computing technologies to dynamic networking and information warfare.
CESAR's primary sponsor is the DOE Office of Science. Additional support is received from several agencies, including BMDO, DARPA, NRO, ONR, ARDA, DOE/IN, DOE/FE, and NASA. All activities are synergistic and expand the scope of leading edge expertise and experimental facilities at ORNL. In FY'01, CESAR's basic research budget exceeded $7,500 K. As a collaborative research facility, CESAR

provides guests from universities, federal laboratories, and industry with access to state-of-the-art (and often unique) technology and equipment in a stimulating research environment. By fostering technology transfer and student education, CESAR enhances U.S. scientific and technological capabilities, while focusing on strategic areas vital to science, national security, and international competitiveness.

1992-1994 **Supervisor**, Nonlinear Science and Information Processing Group
Robotic Systems & Adv. Computer Technology Section, JPL/Caltech.

1989-1992 **Supervisor**, Neural Computation and Nonlinear Science Group
Microdevices Technology Section, JPL / Caltech.

1987-1989 **Supervisor**, Advanced Computer and Neural Systems Group
Automated Systems Section, Jet Propulsion Laboratory, Caltech.

1985-1987 **Principal Investigator**, Center for Engineering Science Advanced Research, ORNL

1985-1987 **Head**, Machine Intelligence and Advanced Computer Systems Group, ORNL

1983-1985 **Head**, Advanced Energy Systems Group, ORNL

1980-1983 **Project Leader**, Energy Systems Analysis Group, ORNL
1980 **Task Leader**, Reactor Methods and Data Development Group, ORNL

Professional Societies:
Member, American Association for the Advancement of Science (AAAS)
Member, IEEE
Member, International Neural Network Society (INNS)
Member, SPIE
Member, Planetary Society

Name: Thomas O. Barron, Jr.

Position: Senior Unix Systems Programmer
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Group: Computer Systems and Operations
Phone: (865) 576-1620
Fax: (865) 241-2850
Email: tbarron@ornl.gov

Key Skills: Systems Analysis and Design
Software Development
Unix System Administration

Education: B.S. in Computer Science, Vanderbilt University (1983)

Experience: Tom Barron is a Senior Unix Systems Programmer in the Computer Systems and Operations Group in the Center for Computational Sciences at Oak Ridge National Laboratory. As a member of the System Administration team responsible for the reliable, secure, and effective operation of CCS' supercomputers, Mr. Barron's primary responsibility is development of software tools and infrastructure to support the team's mission. A secondary responsibility is to help with general administration and maintenance of the supercomputers.

Before coming to ORNL at the end of 2000, Mr. Barron worked in a variety of private sector positions developing software and network solutions in the fields of Telephony Accounting, Electronic Prescription Systems, and Credit Card Transaction Processing on systems ranging from early versions of Windows to the most recent variants of Unix. Mr. Barron is currently pursuing a Master's Degree in Software Engineering through the University of Maryland.

Name: B. Richard Bass

Position: Distinguished R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
Phone: (865)576-8571
Fax: (865)574-0651
E-mail: bassbr@ornl.gov

Education: Ph.D., Mechanical Engineering, Tulane University, 1969
B.S., Mechanical Engineering, Tulane University, 1964
Additional Undergraduate, Mechanical Engineering, Manchester University, UK

Experience: Research Manager, Oak Ridge National Laboratory; Senior Research Member, Oak Ridge National Laboratory; Visiting Professor, University of Wales, (Swansea); Assistant Professor (Engineering Mechanics), Old Dominion University

Dr. Bass' research and teaching activities at Old Dominion University (ODU), Norfolk, Virginia, were concentrated in the areas of rational mechanics and computational continuum mechanics. While at ODU, he was awarded, as principal investigator, a National Science Foundation research grant in the area of thermodynamic stability theory. During academic year 1975-1976, Bass held a visiting faculty appointment at the University of Wales, where he engaged in research in finite element applications to thermally-loaded structures.

Dr. Bass joined Oak Ridge National Laboratory (ORNL) in 1977, as a senior research member and computational mechanics leader for the NRC-sponsored Heavy-Section Steel Technology (HSST) program. In his early years with the HSST project, he had major responsibility for planning laboratory-scale and large-scale tests to validate and in developing/validating improved fracture mechanics analysis techniques. He now serves as manager/technical director of the HSST program, which is the NRC's lead program on reactor pressure vessel integrity technology. He also manages the NRC-sponsored International RPV Technology project. As a part of his efforts in support of these NRC projects, he has

developed and used advanced finite-element analysis methods and computer codes. He is widely recognized by his peers as an expert in analytical mechanics, especially relative to fracture analysis methods. In his leadership role, he coordinates the technical work of researchers within ORNL and program subcontractors. He has served as the technical manager for a large number of international collaborations (see below).

Starting in 1989, Dr. Bass co-organized and co-chaired (with GRS/Koln) the international Fracture Analysis of Large-Scale International Reference Experiments (FALSIRE) Project. FALSIRE was a two-phase project sponsored by the Fracture Assessment Group of Principal Working Group-3 (PWG/3) of the Organization for Economic Cooperation and Development/Nuclear Energy Agency's Committee on the Safety of Nuclear Installations (CSNI). Each phase was a three-year endeavor and involved researchers from more than 20 countries. FALSIRE was followed by a three-year CSNI project entitled International Comparative Assessment Study of Pressurized Thermal-Shock Technology, which was also co-chaired by Dr. Bass and GRS/Koln. From 1995 to the present, Dr. Bass has served as the U.S. technical representative to and Vice Chairman of the European Community (EC) network known as NESC. He also has played lead roles in organizing and performing the EC networks VOCALIST, QUAMET, and SMILE. As part of the HSST program, he led the joint Japan/U.S. Program for Elastic-Plastic Fracture in Inhomogeneous Materials and Structures.

He has authored more than 75 technical papers and reports. He has made numerous presentations at professional conferences, international symposia, and NRC-sponsored meetings with nuclear industry organizations.

Professional Societies: American Society of Mechanical Engineers
Subcommittee E-08.08 of the American Society for Testing and Materials

Name: Charles K. Bayne

Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Telephone: (865) 574-3134
Facsimile: (865) 574-3527
E-mail: bayneck@ornl.gov

Key Skills: Statistical Consultant, Applied Mathematics, Chemistry

Education: PhD, Statistics, North Carolina State University, Raleigh, NC (1974)
MS, Applied Mathematics, Washington University, St. Louis, MO (1968)
BA, Mathematics/Chemistry, Blackburn College, Carlinville, IL (1966)

Professional Experience:

1974- 2002 **Group Leader**, Statistics and Data Sciences, Computer Science and Mathematics Division, Oak Ridge National Laboratory. Statistical Consultant to the International Atomic Energy Agency on quality control for uranium and plutonium measurements; Statistical Consultant at Oak Ridge National Laboratory: environmental remediation, experimental design, response surface methodology, process optimization, chemometrics, data analysis, statistical process control, and pattern recognition problems.

Professional Activities: **Memberships**: American Statistical Association, American Society for Quality Control, American Society for Testing and Materials

Committees: 1998 Chair for a Contributed Paper Session at ASA, 1996 Program Chair for the Section on Physical and Engineering Sciences. The Wilcoxon and Youden Technometrics Prize Committee (1977-1990); Committee to form the Chemometrics Subsection of ASA (1985-86); Awards Committee for the 1992 Statistics in Chemistry Award, ASTM Data Quality Objectives Committee.

Reviewer: Journal of the American Statistical Association; Journal or Analytical Chemistry; Chemometrics and Intelligent Laboratory Systems; Communications in Statistics; Technometrics; The American Statistician.

Name: John D. Bell

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
Phone: (865) 241-5922
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Key Skills: Database Analysis, Design, and Administration
Using Large Storage Systems
Signal Processing
Data Acquisition and Analysis
Numerical and Scientific Computer Programming

Education: B.A. in Physics, Earlham College [Richmond, IN] (1977)
Purdue University, (1978)
M.S. in Physics, University of Tennessee (1983)

Experience: John Bell is a member of the Systems Engineering and Technology Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory (ORNL). He has worked on projects for ORNL's Physics, Fusion Energy, Energy, and Environmental Sciences Divisions.

In research, Mr. Bell has worked on modeling magnetic fields, heat transport and X-ray production in plasmas; analysis of fluctuations in plasmas and databases for moving household goods, handling chemical weapons, and archiving data files for atmospheric research; and design of data acquisition systems, and databases and applications for storing and retrieving very large numbers of data files. He has co-authored over 100 reports and papers in the open literature, with first-author papers in **Nuclear Fusion** and **Review of Scientific Instruments**. He is a member of the American Physical Society.

Name: David E. Bernholdt

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
Phone: (865) 574 3147
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Key Skills: Expertise in high-performance scientific computing, especially computational chemistry. Ability to bridge research in computational science and computer science

Education: Ph.D., Chemistry Major, Physics and Mathematics Minors, University of Florida (1993)
B.S., Chemistry Major, University of Illinois (1986)

Professional Experience:

08/2000-Present: Research Staff Member, Network and Cluster Computing Group, Computer Science and Mathematics Division. His research interests include tools and techniques for the development and use of large-scale scientific simulation software packages, high-performance (parallel) methods and algorithms and other issues in computational science. He is a principal investigator of the Center for Component Technology for Terascale Simulation Software, Synthesis of High Performance Algorithms for Electronic and Nuclear Structure Calculations, and the Earth Systems Grid II projects, as well as lead investigator for chemistry for the Center for Computational Science.

1995-2000: Alex G. Nason Fellow and Sr. Research Scientist, Northeast Parallel Architecture Center (NPAC) and a Research Assistant Professor in the Dept. of Chemistry at Syracuse University. At Syracuse, he continued to contribute to the development of NWChem and oversaw NPAC's work with the Dept. of Defense High Performance Computing Modernization Program (approximately $1.8M/yr) including work in network-based collaboration and distance education and web-based computing environments.

Professional Societies: Association for Computing Machinery
American Chemical Society
American Physical Society

Name: Dr. Budhendra Bhaduri

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Geographic Information Science and Technology Group
Phone: (865) 241-9272
Fax: (865) 241-6261
Email: bhaduribl@ornl.gov

Key Skills: Geospatial Modeling and Simulation
Geographic Information Systems
Remote Sensing
Water Resources Modeling

Education: Ph.D., Earth and Atmospheric Sciences, Purdue University (1998)
M.S., Geology, Kent State University (1995)
M.S., Geology, University of Calcutta, Calcutta, India (1992)
B.Sc. (Honors), Geology, minor in Physics and Chemistry, University of Calcutta, Calcutta, India (1989)

Experience: Dr. Bhaduri is the Group Leader of the Geographic Information Science and Technology Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory. Dr. Bhaduri's responsibilities include conceiving, designing, and implementing innovative computational methods and algorithms to solve a wide variety of problems involving land cover modeling, facility siting, natural resource studies, emergency management, terrain mapping, hazardous waste analysis, transportation studies, and geodata generation using various geographic information system (GIS) and image analysis techniques. In addition to GIS and Remote Sensing, his expertise covers a variety of topics in earth and environmental sciences including water quantity and quality issues, watershed management, and erosion and sediment control. He has published extensively in a number of scientific journals and is a co-author of a sedimentation basin manual produced for the state of Ohio.

While at Purdue, Dr. Bhaduri's research included modeling the impact of non-point source pollution control measures in urban/suburban watersheds. His projects included land use/land cover analysis of satellite imagery using remote sensing techniques and assessing the environmental impact of urbanization on a local wetland and ground water resources.

Name: Kevin Ray Birdwell

Position: R&D Associate
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation
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Education: Ph.D. (30% complete), Geography, University of Tennessee, Knoxville, TN. Emphasis Areas: Climatology, Environmental Geography, Air Quality/Pollution M.S., Geography, Murray State University, Murray, KY, 1996
B.S., Geography, Murray State University, Murray, KY, 1988
A.A., Bible, Central Bible College, Springfield, MO, May 1986

Experience: Oak Ridge National Lab, UT-Battelle, 2001-Present, Research associate.
Oak Ridge Associated Universities, 1991-2001, Computer meteorological specialist.
Covenant Life Christian College, 1998-2001, Part-time instructor.
Oak Ridge Associated Universities, 1989-1991, Research intern at Oak Ridge National Lab, CDIAC.
Oak Ridge National Lab, Martin-Marietta, 1988, Research intern at Oak Ridge National Lab, CDIAC.
Murray State University, 1988-1990, Graduate assistant, Computer Faculty Resource.
Town of Bruceton, 1989, Cartographic Consultant.
Murray State University, 1988, Student employee, Meteorological assistance.
US Naval Command Detachment, 1979-1980, Meteorological assistant.

Name: Arthur S. (Buddy) Bland

Position: Group Leader
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
Group: Computer Systems and Operations
Scientific Applications Support Groups
Phone: (865) 576-6727
Fax: (865) 241-2850
Email: blandas@ornl.gov

Key Skills: Operating System Design
High Performance Computer System Architecture
Unix System Administration

Education: B.S. in Computer Science, University of Southern Mississippi (1979)
M.S. in Computer Science, University of Southern Mississippi (1980)

Experience: Buddy Bland is the Group Leader of the Computer Systems and Operations Group and the Scientific Applications Support Group in the Center for Computational Sciences at ORNL. The groups have 17 professionals who construct, manage, and assist users with the computing, storage, and visualization systems of the CCS. In addition, Mr. Bland manages the 12 University of Tennessee (UT) staff and students who are members of the Joint Institute for Computational Sciences who conduct research in computing and computational sciences jointly with UT and ORNL collaborators. Finally, Mr. Bland directs the group of 11 computer operators who run the ORNL computer center.

Mr. Bland has worked on a variety of computer systems developing operating systems and networking systems for the early Cray supercomputers, managing computer systems from KSR, Intel, IBM, and Compaq.

Affiliations: President, Compaq Advanced Scientific and Technical Users' Group
Member of the HPSS Exec. Committee Assoc. for Computing Machinery

Name: Yehuda Braiman

Position: Senior Staff Member, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Coupled arrays of semiconductor and solid state lasers, Josephson junctions and quantum dots; Control of motion and friction at the nanoscale; and Synchronization and control of chaos in nonlinear distributed systems.

Education:
Ph.D., Physical Chemistry, Tel Aviv University, Israel (1993)
M.S., Physics, Tel Aviv University, Israel (1980)
B.S., Mathematics, University of Vilnius, Lithuania (1975)

Professional Experience:

08/1998- **Senior Research Staff Member,** Complex Systems Group, ORNL. Established a Directed Energy and Optical Communication Laboratory in 1999. Brought a number of internationally known laser experts. His own research devoted towards development of techniques to synchronize laser arrays. The team leaded by Dr. Braiman, successfully demonstrated frequency and phase locking and synchronization of broad area lasers. The team published and submitted numerous papers on injection locking and synchronization of laser array. The team also submitted a patent application named *Laser Array Synchronization* (January 2002).

1995-1998 **Postdoctoral Researcher and later on Visiting Assistant Professor,** Emory University, Atlanta, GA. His research activities were devoted towards two main topics: (a) synchronization of lasers and (b) dynamics and control of chaos with applications to lasers and friction at the nanoscale.

1993-1995 **Postdoctoral Researcher,** Georgia Institute of Technology, Atlanta, GA. His research was devoted towards understanding mechanisms of synchronization and chaos control in nonlinear dynamical systems and laser arrays. The central outcome of this research was devising a method to synchronize chaotic dynamical system on a periodic behavior. This research was published in Nature and was selected as a cover page on the issue (Nature **378**, 465, 1995).

Professional Societies: Member, IEEE and Member, APS

Name: Marcia L. Branstetter

Position: Research Associate
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics
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Email: branstetterm@ornl.gov

Key Skills: Climatic effects of freshwater from runoff, effects of land cover change on climate, and the incorporation of biogeochemical cycles such as carbon in climate models

Education: Ph.D., Hydrology, University of Texas at Austin, (2001)
M.A., Mathematics, University of Texas at Austin (1995)
B.S., Mathematics, Southwestern University (1986)

Professional Experience:

2001-Present: Research Associate, Climate Dynamics, Computer Science and Mathematics Division. Dr. Branstetter is currently working on enhancing the performance of the land surface component of the NCAR CCSM climate model, analyzing the performance of the river transport component in the CCSM, and investigating biogeochemical cycles and land cover change effects on the climate system.

2001-1995: Graduate Fellow, Department of Geological Sciences, University of Texas. She developed a parallel river transport model for coupled climate system models.

1995-1994: Graduate Research Assistant, Department of Mathematics, University of Texas. She worked on parallel multigrid methods and developing codes to investigate electron delocalization in binary alloys.

Professional Societies: American Meteorological Society
American Geophysical Union
Society for Industrial and Applied Mathematics
Geological Society of America

Name: Edward E. Bright

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Geographic Information Science and Technology Group
Phone: (865) 574-5430
Fax: (865) 241-6261
Email**:** brightea@ornl.gov

Key Skills: Spatial Modeling
Remote Sensing
Geographic Information Systems

Education: M.S., Geography, University of Tennessee (1982)
B.A., Geography, University of Tennessee, magna cum laude (1980)

Experience: Mr. Bright is a Remote Sensing and GIS Specialist, and has more than 19 years experience in computational analysis, application programming, imagery analysis, data visualization, and Geographic Information Systems.

Mr. Bright's current activities include the development advanced spatial models to distribute population. LandScan – a high-resolution global population distribution database, is the standard database used by the Department of Defense for estimating population at risk. Additional research is being conducted on a very high-resolution population database for the U.S. including day/night and demographic variations

Mr. Bright has worked on a wide variety of projects. He was the principal contributor to the development and implementation of NOAA's Coastal Change Analysis Program (C-CAP). Contributions to the C-CAP program include: 1) development of land cover classification techniques using spectral, spatial, and contextual information, 2) field strategies for collecting training samples and accuracy assessment data incorporating real time GPS information, and 3) training of C-CAP personnel and C-CAP regional cooperators. His experience includes serving as a technical consultant for land cover classification projects conducted by other federal, state, and academic institutions throughout the country.

Other projects include high-resolution population calculations for the Nuclear Regulatory Commission, facility management programs for the Panama Canal Treaty Implementation; advanced terrain visualizations, and numerous remote sensing and GIS projects. He has considerable experience with a wide variety of software applications including ERDAS, Arc/Info, Intergraph, PCI, and other remote sensing and GIS packages.

Name: Gregory P. Brown

Position: Postdoctoral Research Associate
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
Phone: (865) 574-4623
Fax: (865) 574-7659
Email: 6bg@ornl.gov

Key Skills: Scientific Computer Programming and Statistical Mechanics Analysis

Education: Bachelor of Science, Physics Major, Kansas State University, 1991
Doctor of Philosophy, Physics, Kansas State University, 1995

Experience: Post-Doctoral Scientist, McGill University, 1995-1996
Research in phase-ordering dynamics and coherent x-ray scattering

Post-doctoral Scientist, Florida State University, 1997-2001
Research in advanced algorithms, coherent x-ray scattering, electrochemical deposition, and switching in nanoscale magnetic elements.

Adjunct Instructor, Tallahassee Community College, 1998-2000
Responsible for teaching and evaluating students in physics, physical science, and math

Post-doctoral Scientist, ORNL, 2001-Present.
Research in generic programming, advanced algorithms, and magnetism at the nanometer scale.

Name: Randall D. Burris

Position: Storage Systems Manager
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Group: Computer systems and Operations
Phone: (865) 574-0972
Email: burrisrd@ornl.gov

Key skills: Storage systems management and real-time data acquisition and control

Education: B.S. in Mathematics, Michigan State University (1966)
M.S. in Computer Science, University of Tennessee (1975)

Experience: Randy Burris manages the production mass-storage systems for the Center for Computational Sciences. He also leads the Probe storage and networking research facility, the ORNL contribution to the High Performance Storage System development and contributes to the SciDAC Scientific Data Management Integrated Software Infrastructure Center.

In earlier assignments Mr. Burris led the Fusion Energy Division data acquisition and control group and their central computing facility, served as their User Service Center representative to the Magnetic Fusion Energy Computer Center, represented Lockheed Martin to the Open Software Foundation and served on the End User Steering Committee and served in the elected position of End User representative to The Open Group Architecture Committee. He has also worked as system administrator or developer on a variety of IBM and Digital Equipment Corporation computers.

Name: V. Kalyana Chakravarthy

Position: Post-Doctoral Fellow
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics
Phone: (865) 574-3133
Fax: (865) 574-0680
Email: kalyan@msr.csm.ornl.gov

Key Skills: Computational Fluid Dynamics, Combustion Modeling, Automotive Catalysis, Front Tracking/Capturing Methods

Education: Ph.D., Aerospace Engineering, Georgia Institute of Technology, 2000
M.S., Aerospace Engineering, Georgia Institute of Technology, 1993
B. Tech., Aerospace Engineering, Indian Institute of Technology, Madras, India, 1992.

Experience: Kalyana Chakravarthy is a post-doctoral fellow in the Computer Science and Mathematics Division at ORNL. He is currently involved in the development of computational models for automotive exhaust after treatment analysis through the Diesel Cross-Cut Team R&D project focusing on Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS). This modeling research is being conducted in conjunction with the experimental research being done at the Engineering Science and Technology Division. The current focus of his research is to develop models of varying levels of complexity, ranging from simple one-dimensional models to complex multi-dimensional device scale models, for oxidation catalysts, NOx trap catalysts and particulate filters used for diesel exhaust aftertreatment. The work mainly involves modeling of fluid dynamics, surface reactions, conjugate heat transfer, flow through porous media and particle filtration.

Kalyana is also involved in the organizational efforts of the CLEERS project. He is involved in organizing semi-annual technical workshops intended for information exchange between various industries, academic institutions and national laboratories involved in diesel technology. He also makes technical contributions to the CLEERS website which helps to coordinate research efforts between various partners of CLEERS.

Prior to joining the ORNL, Kalyana was involved in research involving direct and large eddy simulations (DNS & LES) of turbulent flows and turbulent premixed combustion. As part of this work, he developed models for subgrid processes in simulations of turbulence and reaction phenomena in addition to an efficient, three-dimensional flow solver for

low Mach number reacting flows. In an acknowledgement of his contributions to the field, he was invited to publish his work on subgrid premixed combustion modeling in Flow, Turbulence and Combustion, a research journal published under the auspices of Europeon Research Community on Flow Turbulence and Combustion (ERCOFTAC).

In the past years, Kalyana has served as a reviewer for the Physics of fluids (published by the American Institute of Physics) and AIAA journal.

Name: Kasidit Chanchio

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics
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Email: chanchiok@ornl.gov

Key Skills: Research and development of advanced software systems, in the areas of distributed computing, fault-tolerance, parallel processing, and high performance computing.

Education: Ph.D., Computer Science, Louisiana State University (2000)
M. S., Computer Science, Louisiana State University (1996)
B. S., Computer Science, Thammasat University, Bangkok, Thailand. (1990)

Professional Experience:

08/2001-Present Research Staff Member, Network and Cluster Computing, Computer Science and Mathematics Division. He is currently working on the DOE Science Grid and Earth System Grid projects. He also involves with the development of Cellular Algorithms for Cellular Architectures. Kasidit currently has a pending US Patent application in the title of "Data Collection and Restoration for Homogeneous and Heterogeneous Process Migration." He has made a number of publications in well-known conferences in distributed computing and parallel processing areas. One of his current publications has won the Best Paper Award from the International Conference on Parallel Processing (ICPP) in 2001. He has also participated in an NSF-granted project, namely "High Performance Computing Mobility Middleware" with his former professor, Dr. Xian-He Sun.

08/2001-10/2000 Post-doctoral researcher, Department of Computer Science, Illinois Institute of Technology. His post-doctoral work and Ph.D. dissertation involved the development of software systems to support check pointing and process migration in heterogeneous distributed environments.

08/2000-08/1995 Research and Teaching Assistant, Louisiana State University and the Illinois Institute of Technology. Kasidit had been working as a research and teaching assistant. He had also worked as an assistant system administrator. He has experiences on a lot of software, especially those related to parallel and distributed computing such as PVM and MPI.

Name: Mei-li Chen

Position: Research and Development Staff
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics
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Key Skills: Computing Technology (software development, online system, modeling, and data analysis) and Instrumentation Technology (DAQ & trigger systems, HE detector, and Nuclear electronics)

Education: Ph.D., Experimental High Energy Physics, Department of Physics, The University of Michigan (1992)

Professional Experience:

09/2001-Present: Research and Development Staff, Network and Cluster Computing Group, Computer Science and Mathematics Division. Mei-li has been working on HPSS development. She currently works on WAN Buffer Project. To transfer files to a remote HPSS installation, software is needed to decouple users from the relative low Wide-Area Network transfer rate, saving both time of users and resources on the supercomputer.

05/2001-02/1999: Research Scientist, STAR Experiment Computing Group, Brookhaven National Laboratory. Mei-li's major contribution was on online software. The Event-Pool system she successfully developed played an important role in STAR online monitoring and data quality assurance in first RHIC run 2000.

01/1999-1987: Assistant Research Scientist, High Energy Cosmic Ray Group, Department of Physics and Astronomy, University of Maryland College Park, MD. She developed outer-detector online/daq system of Super-Kamiokande experiment, which is the largest underground water cherenkov detector in the world and located in Kamioka Mozumi, Japan. She also made valuable contributions to MILAGRO, the first water cherenkov detector in the world specially built to study extensive air showers, on online/daq system development, detector simulation, and data analysis.

Professional Societies: Member of APS and of LANL users group
Member of RHIC &AGS users group

Name: Kenneth W. Childs

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Group: Modeling and Simulation Group
Phone: (865)576-1759
Fax: (865)576-0003
Email: childskw@ornl.gov

Key Skills: Computational Heat Transfer
Computational Fluid Dynamics
Scientific Computer Programming

Education: B.S. in Mechanical Engineering, University of Tennessee (1971)
M.S. in Mechanical Engineering, University of Tennessee (1974)

Experience: Mr. Childs has 30 years of experience working on a variety of computational problems primarily in the areas of heat transfer and fluid flow. He was heavily involved in design and safety analysis calculations for the High Flux Isotope Reactor Upgrade, and is currently working on the Spallation Neutron Source. He worked for many years in the area of building energy conservation and is an expert in heat transfer through building envelopes. He is a member of the American Society of Mechanical Engineers and is a licensed Professional Engineer in the state of Tennessee.

Name: Phillip Coleman

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Geographic Information Science and Technology Group
Phone: (865) 574-5393
Fax: (865) 241-6261
Email: colemanpr@ornl.gov

Key Skills: Application Programming
Geographic Information Sciences
Computational Geometry

Education: M.S., Mathematics, University of Tennessee (1967)
B.S., Mathematics, University of Tennessee (1966)

Experience: Mr. Phil Coleman is a Senior Computational Specialist, and has more than 33 years experience in computational analysis, application programming, computational geometry, geographic information sciences, and data visualization. He was an integral part of the Oak Ridge team that developed sophisticated GIS systems in the 1970s. Mr. Coleman's early work included the development of new computer algorithms that provided the capability for the analysis and display of large national databases. Mr. Coleman's current activities include the development of a high-resolution (one kilometer cell) worldwide population distribution model (LandScan), as well as a much higher resolution version (90 meter cells) for the United States (LandScanUSA), which includes daytime and nightime estimations. He is also developing a model to tabulate potential pesticide runoff contamination for the nation's 7000 community water supplies.

Mr. Coleman has contributed to a wide variety of projects including the development of the earliest forms of GIS software; development of population at risk estimation algorithms that combine remote sensing data, GIS, and atmospheric transport technologies; advanced geo-visualization development; national surface water planning and flooding prediction; assessment of public health and environmental impacts associated with the storage, transport, and disposal of ordnance; assessment of risks associated with radioactive material transport; natural resource management; terrain modeling; assessment of environmental impacts associated with military training exercises; development of the Oak Ridge Environmental Information System; and hazardous waste site characterization. Mr. Coleman is the author or co-author of more than 65 publications,

including journal articles, conference proceedings, and technical reports. He is proficient in FORTRAN, Visual Basic, Visual Basic for Applications, Arc Macro Language, ArcView Avenue, MapObjects, FoxPro, and dBase programming languages, as well as Arc/Info, ArcView, Access, Excel, SQL databases, MapInfo, and AutoCAD software packages.

Name: Richard L. Cox

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
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Key Skills: Experience in fluid flow and heat transfer calculations

Strong interest in numerical mathematical methods with particular experience in solution of large sets of linear equations, solution of nonlinear equation sets, integration of stiff and non-stiff systems of ordinary differential equations, method of lines solution of partial differential equations, and solution of nonlinear optimization problems. Served as Numerical Mathematics Consultant for K-25 Site from April 1984 to September 1992 at which time this service was discontinued.

Versed in FORTRAN. Knowledge of C/C++. Experience with NAG, IMSL, HARWELL, and SLATEC numerical mathematical software libraries. Familiar with UNIX, DEC VMS, DOS, IBM, and CRAY operating systems.

Education: B.S. Chemical Engineering, University of Tennessee, Knoxville, 1963
M.S. Chemical Engineering, University of Tennessee, Knoxville, 1965
Ph.D. Chemical Engineering, University of Tennessee, Knoxville, 1976

An additional 66 quarter hours of graduate mathematics at University of Tennessee in early eighties.

Experience: Modeling of steady state and transient flows/pressures in piping systems and of heat transfer in heat removal systems of gaseous diffusion cascades.
Modeling of steady state and transient flows/pressures in piping systems of gas centrifuge cascades.
Optimization of flow sheets for gas centrifuge cascades.
Combat Modeling.
Chemical absorption heat pumps.
LMFBR (Liquid Metal Fast Breeder Reactor) fuel recycle program.

Name: Donald A. Cross

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Web Application Design and Development
Scientific Computer Programming
Database Design/Maintenance/Administration
Hardware/Software Integration and Troubleshooting

Education: B.S. in Computer Science, Tennessee Technological University
summa cum laude (1994)

Experience: Donald Cross has 7 years of experience in software engineering and development. He has extensive knowledge in C/C++ programming languages, database design and CGI based web application development. Mr. Cross is the technical lead on the web based Job Posting System (JPS) and the Nonemployee Processing System (NEP). He has also been instrumental in the hardware and software integration and troubleshooting for the new Security Access Control System (SACS).

Mr. Cross has previously developed a Radioactive Material Inventory System that was used by Waste Management and a Discharge Monitoring Report system that was used by Environmental Management.

Name: Eduardo F. D'Azevedo

Position: Applied Mathematician and Group Leader
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Key Skills: High performance computing, Numerical linear algebra, Optimal mesh generation

Education: PhD, Computer Science; University of Waterloo, Ontario, Canada, 1989

Experience: Eduardo is a research applied mathematician and group leader for the computational mathematics group at ORNL. After receiving his PhD from the University of Waterloo, Eduardo came to Oak Ridge as an ORISE postdoctoral fellow. Eduardo's research interests include optimal mesh generation, numerical linear algebra and scientific computing on high performance parallel computing environments. During his scientific career as an applied mathematician, he has collaborated with scientists across the laboratory and worked on a variety of applications such as modeling groundwater flow and contaminant transport, modeling multiphase computational fluid dynamics in fluidized beds, in modeling wave plasma interaction in fusion reactor, adaptive quadrature and fast solver for modeling core collapse supernova. He has developed iterative solvers for sparse linear systems and efficient libraries for parallel I/O, molecular dynamics and particle tracking. He is the developer of memory efficient compact storage and out-of-core ScaLAPACK dense linear solvers that are heavily used for computing the wave scattering properties of aircrafts in Northrop Grumman.

Eduardo has authored or co-authored over 30 technical publications and has served on the organizing committee for the 7^{th} and 8^{th} International Meshing Roundtable and as reviewers for IEEE and SIAM journal publications.

Name: Cassius D'Helon

Position: Postdoctoral Research Associate, Complex Systems Group
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Division: Computer Science & Mathematics Division
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Research Interests: Quantum computation, Laser physics, Optical tweezers, Time series analysis, Electronic instrumentation, Quantum physics, Fibre optics & optical solitons, Mathematical modeling, Neural networks, Digital signal processing.

Education: Ph.D., Physics, University of Queensland, St. Lucia, Australia (1997)
Graduate Certificate, Higher Education, Griffith Institute for Higher Education, Mt. Gravatt, Australia (1999)
B.S., Physics, University of Queensland, St. Lucia, Australia (1992)

Professional Experience:

2001-Present **Postdoctoral Research Associate,** Complex Systems Group, Computer Science and Mathematics Division, Oak Ridge National Laboratory

1997-2001- **Lecturer**, School of Physiotherapy & Exercise Science (PES), Griffith University, Australia. Coordinated and lectured Biophysics and Bioinstrumentation. Researched in collaboration with experimental health sciences groups.

01/1997-06/1997 **Postdoctoral Research Assistant,** Centre for Laser Science, University of Queensland, Australia.

Name: Terry L. Dickson

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation
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E-mail: dicksontl@ornl.gov

Education: B.S., Mechanical Engineering, University of Memphis, 1973
M.S., Engineering Mechanics, University of Tennessee, 1978
M.S., Applied Mathematics, University of Tennessee, 1999

Experience: Oak Ridge National Laboratory (ORNL), Arabian American Oil Company, (ARAMCO), Tennessee Valley Authority (TVA)

Mr. Dickson is currently a senior development staff member the Oak Ridge National Laboratory. He has over 25 years of experience in the development and application of software to various areas of engineering analysis.

During 1973-1978, Mr. Dickson worked in the Engineering Analysis Division at the Tennessee Valley Authority in Knoxville, Tennessee, where his primary responsibilities were in the development and application of thermal-hydraulic and structural mechanics simulation software for the design and operation of fossil and nuclear power plants. From 1978-1980, he worked as a results engineer at a 2600 Mw fossil power plant where his primary responsibilities were monitoring and improving the plant heat rate (efficiency) and the balancing of large rotating machinery.

During 1980-1988, he worked in Simulation Systems Division of the Arabian American Oil Company in Dhahran, Saudi Arabia, where his responsibilities were the development, validation, and implementation of computational methodologies into software systems for application to the optimization of reservoir production strategies and the design of oilfield surface facilities. During 1986-1988, Terry was supervisor of a group of geophysicists and systems analysts whose responsibilities included the development and application of well log processing software systems and databases which stored and retrieved millions of records containing hydrocarbon fluid property data obtained from core samples.

Since 1988, Mr. Dickson has been working at the Oak Ridge National Laboratory. His responsibilities have been the development, validation,

and implementation of computational methodologies into software systems for application to issues regarding the regulation of nuclear reactors. More specifically, his work has been focused in the development and application of computer codes designed to perform deterministic and probabilistic fracture analyses of aging and increasingly neutron-embrittled light-water nuclear reactor pressure vessels subjected to transient thermal-hydraulically induced loading conditions. Terry has authored or co-authored over 40 technical papers and reports.

Name: Jack Dongarra

Position: University Distinguished Professor of Computer Science
University of Tennessee
Adjunct R&D Participant, Oak Ridge National Laboratory
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Division: Computer Science and Mathematics
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Review Panel: Panel on Digitization and Communications Science, Army Research Laboratory Technical Assessment Board, National Academies of Science, 2002 – Present
External review panel for Computer Science at Sandia National Lab, SNL - DOE, 2001.

Editor-in-Chief: International Journal of High-Performance and Applications (1992-Present)
Netlib (1985 - Present)
SIAM Series on Software, Environments, and Tools for Scientific Comp (1994 - Present)

Editorial Board: Applied Numerical Mathematics (1994 - Present)
Computers in Science and Engineering (1999 - Present)
Concurrency & Computation: Practice and Experience (2001 - Present)
Electronic Transactions on Numerical Analysis (1993 - Present)
International Journal of Applied Mathematics (1999 - Present)
International Journal of High Speed Computing (1994 - Present)
Journal of Distributed and Parallel Computing (1988 - Present)
Journal of Numerical Linear Algebra with Applications (1994 - Present)
Journal of Performance Evaluation and Modeling for Computer Systems (2001 - Present)
Journal of Supercomputing (1987 - Present)
Numerical Linear Algebra with Applications (1994 - Present)
Numerical Algorithms (1994 - Present)
Parallel Computing (1987 - Present)
Parallel Processing Letters (1993 - Present)
SIAM Monographs in Math. Modeling in Computation (1995 - Present)

Professional Services:
Adjunct Professor, Rice University, 1988-present
Vice-Chairman for the ParkBench Activity, 1994-1998

Name: John B. Drake

Position: Group Leader
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics
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Key Skills: Numerical methods and parallel algorithms for climate dynamics. Numerical solution of partial differential equations and integral equations with particular regard to supercomputing applications. Mutliresolution and "Fast" numerical algorithms.

Education: Ph.D., Mathematics, University of Tennessee (1991)
M.S., Applied Mathematics, Purdue University (1979)
B.A., Mathematics, University of Kentucky (1977)

Professional Experience:

1999-Present Group Leader, Climate Dynamics Group, Computer Science and Mathematics Division. He is responsible for defining and managing the research agenda for our group. I am also an active participant in the development of parallel algorithms and numerical methods for atmospheric dynamics.

1999-1984 Staff Member, Mathematics Group, Mathematical Sciences Section
Conducted research on numerical methods for partial differential equations and their applications to a variety of projects within and outside the lab.

1984-1979 Engineering Mechanics Section of Technical Applications Department, Computer Science Division

Name: Thomas H. Dunigan

Position: Senior Research Staff
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics
Phone: (865) 576-2522
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Key Skills: Computer and network performance characterization,
Computer and network security

Education: B.S., Physics and Mathematics, Duke University
M.S. and Ph.D., Computer Science, University of North Carolina

Experience: Dr. Dunigan has active research interests in intrusion detection systems, network performance, and in the performance characterization and analysis of parallel computers and their communication subsystems. For the last 15 years, he has led efforts at ORNL for evaluating early releases of parallel computing systems, including the IBM p690, Compaq AlphaServer SC, Intel iPSC/1, iPSC/2, iPSC/860, and Paragon, the SRC 6, Kendall Square, and Chen shared-memory multiprocessors. He has been actively involved in the Internet since helping bring the Arpanet/Internet to ORNL in the early 80s. Recent research activities include using network traffic flow characteristics to detect intrusions and investigating ways to tune the TCP protocol to improve high-latency, high-bandwidth bulk transfers. As a collaborating scientist and adjunct associate professor with the University of Tennessee, Dr. Dunigan has taught graduate-level Computer Science courses in networks and in computer security.

Name: Walter P. Dykas, Jr.

Position: Group Leader
Laboratory: Oak Ridge National Laboratory
Division: Network and Computing Technologies Division
Group: Cyber and Information Security Group
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Key Skills: Computer Security Policy and Infrastructure Management
Power Systems Engineering
Large Scale Power Systems Modeling

Education: BS-Electrical Engineering, University of Missouri-Rolla (1985)
MS-Electrical Engineering, University of Missouri-Rolla (1987)

Experience: Walter Dykas is the Group Leader of the Cyber and Information Security Group. The group provides policy and technical expertise for information protection for the Oak Ridge National Laboratory. The group implements and maintains the policy and technical infrastructure to protect information on and access to ORNL computer and network resources, including network firewalls, high speed network intrusion detection systems, host based intrusion, network and system vulnerability analysis, penetration testing, malicious code (e.g., virus) testing and detection, computer and network forensics. The group is comprised of eight computer and information security professionals; four with MS-level degrees. The group has expertise in network data transmission protocol analysis and software development, database development, system configuration and vulnerability testing for most contemporary operating systems. Members of the group have given invited talks and seminars at several computer security conferences.

In his role as the ORNL Cyber Security Manager, Mr. Dykas participates on several DOE-wide working groups including: DOE Chief Information Officer (CIO) Technical Working Group, the System of Laboratory Computing Coordinating Committee Technical Working Group, and the Battelle DOE-Lab Cyber Security Working Group. By request, he has participated in reviews and development of DOE security policy and DOE site computer security programs.

In research, Mr. Dykas has worked on a variety of computational problems including the modeling of large scale power systems for reactive power support requirements for large power transfers in the Mid-West U.S., integration of wind generated power into the electric power grid, super conducting magnetic energy storage to stabilize electric power system transients, and partial energy function analysis of power system transients.

Professional Societies: Institute of Electronic and Electrical Engineers, Computer Society

Name: Mark Thomas Elmore

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology
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Education: Graduate Work, Computer Science, University of Tennessee, Knoxville
B.S., Computer Science/Mathematics, University of Tennessee, Knoxville, 1994 Graduated Summa Cum Laude

Academic Honors: Top Graduate (Class Rank: 1 of 1846), UTK Spring 1994 Commencement, UTK Chancellor's Citation for Outstanding Academic Achievement, Upsilon Pi Epsilon National Computer Science Honor Society, Golden Key National Honor Society, The Honor Society of Phi Kappa Phi

Academic Activities: UTK Liberal Arts Dean's Student Advisory Council, Computer Science Department Representative; UTK Liberal Arts Faculty Curriculum Committee, Student Representative; UTK Liberal Arts Faculty Natural Science Committee, Student Representative

Experience: 1994- Present: Oak Ridge National Laboratory, Research Software Engineer

Currently involved in the design and implementation of several software agent based projects including Technical Lead on *Virtual Information Processing Agent Research (VIPAR)* using Semantic Web ideas in an innovative agent-based internet information collection and organization process, and Principal Investigator on the *Portofilio Management Environment (PME)*, an agent based distributed federation of disparate data using a breakthrough combination of Java/Servlets/RMI/XML, currently undergoing evolution into a Department of Energy (DOE) wide system.

Variety of leadership, presentation, system design, and programming experience with this Computer Science research group, often software agent based, using Java, RMI, RDF, XML, Servlets, Object-Oriented Analysis and Design, C, Perl, SQL, C with Embedded SQL, Oracle and Java extensions, JavaScript, Shell Scripts, awk, sed, CGI, HTML, SGML, LATEX, Word, WordPerfect, FoxPro, Access, Excel, Unix, VMS, Windows, DOS.

1998-Present: Pellissippi State Technical Community College Adjunct Professor, Computer Science Department. Java and C courses.

1975 - 1994: Y-12 Fire Department, Oak Ridge City Fire Department Fire Protection Inspector, Fire Truck Operator, Emergency Medical Technician, Computing advisor.

Name: Wael R. Elwasif

Position: Research Associate
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Division: Computer Science and Mathematics
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Key Skills: Distributed metacomputing systems, component technology for high performance computing and distributed storage systems

Education:
Ph.D., Computer Science, University of TN, Knoxville (Spring 2002)
M.Sc, Computer Science, University of TN, Knoxville (1999)
M.Sc, Applied Mathematics, Florida Institute of Technology (1996)
B.Sc, Electronics Engineering, Mansoura University, Egypt (1989)

Professional Experience:

09/2000-Present: Research Associate, Network and Cluster Computing Group, Computer Science and Mathematics Division. He is currently working on the HARNESS heterogeneous extensible metacomputing environment and on the Common Component Architecture (CCA) component framework for high performance computing.

Professional Societies:
Member, Institute of Electrical and Electronics Engineers, Inc. (IEEE)
Member, Association for Computing Machinery

Name: Christian Engelmann

Position: Research Associate
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Key Skills:Distributed algorithms, parallel and scientific computation, cluster computing, collaborative computing, fault-tolerance, and object-oriented analysis, architectures and design

Education: Advanced European Master of Science, Parallel and Scientific Computation, University of Reading, United Kingdom (May 2001)
German Certified Engineer [Diplom-Ingenieur (FH)], Computer Systems Engineering [Technische Informatik], College for Engineering and Economics [Fachhochschule fuer Technik und Wirtschaft] Berlin (February 2001)

Professional Experience

06/01-Present: Research Associate, Network and Cluster Computing Group, Computer Science and Mathematics Division. Responsible for improving the distributed peer-to-peer control in Harness, and developing a simulator and exploring scientific algorithms for cellular architectures in cooperation with the IBM BlueGene/Light project for realizing super-scale fault-tolerant distributed systems.

01/2001-08/2000: Explored scalable data replication algorithms for realizing large-scale fault-tolerant distributed systems in his Master thesis about the Distributed Peer-to-Peer Control for Harness.

09/1999-10/1998: Developed an object-oriented graphical user interface application framework with model-view-controller architecture for an embedded networked mobile patient monitoring system in the Patient Monitoring Division of Hewlett Packard Germany (Agilent Technologies).

Professional Societies: Member, Institute of Electrical and Electronics Engineers, Inc. (IEEE)
Member, IEEE Computer Society
Member, IEEE Computer Society Task Force on Cluster Computing
Member, Association for Computing Machinery

Name: David J. Erickson III

Position: Senior Research Staff Member
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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E-mail: ericksondj@ornl.gov

Key Skills: Global climate modeling, numerical modeling of atmospheric chemistry, and modeling the global air-sea exchange of energy, momentum, trace gases and particles

Education: Ph.D., Atmospheric Chemistry/Marine Chemistry, University of Rhode Island (1987)
B.S., Physical Chemistry, William and Mary (1982)

Professional Experience:

2000-Present: Senior Research Staff Member, Climate Dynamic Group, Computer Science and Mathematics Division. He does research on the numerical simulation of global climate using a variety of general circulation models. He also has interests in the global simulation of air-sea trace gas flux and interactions among various global biogeochemical cycles. He is also the Director of the Climate and Carbon Research (CCR) focus of the Center for Computational Sciences at ORNL.

1999–2000: Scientist, University Space Research Association, Laboratory for Atmospheres, NASA/Goddard Space Flight Center

1990-1999: Scientist, National Center for Atmospheric Research

1987-1990: Post-doctoral Research Fellow, Scripps Institution of Oceanography University of California, San Diego

Name: Mark R. Fahey

Position: Research Scientist
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
Group: Joint Institute for Computational Sciences to support the Computer Systems and Operations and Scientific Applications Support Groups
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Key Skills: Parallel Programming
High Performance Computing Support
Numerical Analysis and Scientific Computing

Education: B.A. in Mathematics, St. Norbert College (1992)
M.A. in Mathematics, University of Kentucky (1994)
Ph.D. in Numerical Analysis, University of Kentucky (1999)

Experience: Mark Fahey recently began work as a research scientist in the Joint Institute for Computational Sciences (JICS) in the Center for Computational Sciences at ORNL. Previously, Dr. Fahey worked for Nichols Research (later Computer Sciences Corporation) at the Engineer Research and Development Center Major Shared Resource Center (ERDC MSRC), a DoD high performance computing site previously known as the Corps of Engineers Waterways Experiment Station (CEWES) MSRC. In March 2000, Dr. Fahey became Director of the Computational Science and Engineering group. At ERDC MSRC, Mark's work and those of his group included migration of application codes to Compaq EV40s, SGI Origins, IBM SPs and Cray T3Es, parallelization of scientific codes, user support on all HPC platforms, benchmarking that included participation in the creation of the DoD application benchmarks in 2000 and 2001, and the creation of a complex parallel eigenvalue and eigenvector solver that was included in the latest release of ScaLAPACK.

Dr. Fahey's research interests include: numerical linear algebra (namely eigenvalue problems and iterative methods), numerical solutions of partial differential equations, and scientific and parallel computing.

Professional Affiliations: Society for Industrial and Applied Mathematics (SIAM)

Name: Rebecca Ann Fahey

Position: Computational Scientist
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Group: Scientific Applications Support Group
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Key Skills: Programming Languages: Fortran, C, Perl, MPI, and OpenMP
High Performance Computer Systems: IBM, SGI Origin, and Cray T3E

Education: B.S. in Natural Sciences, Shawnee State University (1991)
M.A. in Mathematics, University of Kentucky (1993)

Experience: Rebecca Fahey is a Computational Scientist for the Center for Computational Sciences at Oak Ridge National Laboratory. She has been serving in this capacity since October 2001.

Prior to her current position, Ms. Fahey was the Director of User Services at the Engineering Research and Development Center, Major Shared Resource Center (ERDC MSRC), a Department of Defense high performance computer center. In this capacity she managed the Customer Assistance Center, the Applications Analysts, and the Database group. From 1999 to 2000, she was a computational scientist at ERDC MSRC where she worked with researchers to parallelize and optimize their scientific applications and develop utilities to meet their needs. From 1994 to 1999, Ms. Fahey was a faculty member at the University of Kentucky where she taught in their Community College System. While working for the University of Kentucky, she participated in the implementation of two grant-funded projects designed to increase the utilization of technology in teaching and coordinated a mathematics laboratory that included computer system maintenance as well as the training of faculty on the use of the computer system.

Name: Kathleen N. Fischer

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Web Applications

Education: Sun Microsystems, Inc. certification - Java 2 at the Programmer level, (2001)
C++, Pellissippi State Technical Community College (1999)
Web Development in Java, Pellissippi State Technical Community College (1997)
M.S., Computer Science, University of Tennessee (1978)
B.S., Math, College of William and Mary (1972)

Experience: Kathleen N. Fischer is a software engineer in the Systems Engineering and Technology Group of Oak Ridge National Laboratory (ORNL). She has acquired a broad technical background in computing, as well as effective communication skills and good investigative skills, through her experience with diverse customer and computer environments. She is currently developing web applications for Computer and Network Security at ORNL. She has recently returned to ORNL from an entrepreneurial leave of absence with Shoulders Corp. where she was helping to develop an enterprise application framework implemented in Java.

In the past she has served as Project Data Coordinator for several environmental restoration projects at Oak Ridge. In this role she developed Microsoft Access client-server tools for data entry and reporting, as well as authoring a number of data management and configuration plans. Past work includes automating manual processes for making visuals and publication graphics at ORNL by developing interactive graphics programs. As part of a performance improvement team, she won the Lockheed Martin President's Award for Continuous Improvement in developing software support for distributed graphics at Oak Ridge. She developed and maintained the IBM Office Products Cross Assembler, used to develop operating systems for IBM copiers, printers, and typewriters. She has developed and worked with various models, including printer simulators and high energy particle models. Ms. Fischer has developed software in a variety of computer languages, including Java, C, FORTRAN, PL/1, and Access Basic, as well as in a variety of database platforms, including Access, FoxPro, and Oracle. Ms. Fischer is the author of a number of publications.

Name: Raymond E. Flanery, Jr.

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology

Education: Graduate course work, University of Tennessee, TN 1986–1987
M.S. Mathematics, Youngstown State University, Youngstown, OH 1984–1986
Thesis: "Numerical Solution of Initial Value Problems for Ordinary Differential Equations Using Taylor Series with Recursively Defined Coefficients"
B.S. Mathematics and Computer Science, Youngstown State University, Youngstown, OH 1980–1984

Experience: December 1987 Present, Research Staff, Mathematical Sciences, Oak Ridge National Laboratory
August 1995: Director of the Advanced Visualization Research Center
June 1995: Promoted to Research Staff Member I
June 1990: Promoted to Research Staff Member II
1986 1987, University of Tennessee, Knoxville, TN, Graduate Teaching Assistant, Department of Mathematics
1984–1986, Youngstown State University, Youngstown, OH, Graduate Teaching Assistant, Department of Mathematics and Computer Science,
1984–1986, Mahoning County Board of Education, Youngstown, OH, Programmer/ Analyst

Development of visualization software systems (graphics, graphical interfaces, database interfaces, etc) which allow interactive data mining; research of immersive and multi modal interfaces for these systems; and research of algorithms enabling the use of parallel machines and heterogeneous networks of workstations for visualization are areas of interest.

Most of my work has been performed as part of inter-disciplinary teams. I have worked extensively with other researchers from the fields of statistics, perceptual psychology, physics, biology, atmospheric research and various other mathematical disciplines.

I was recently invited to supply a chapter for a book , tentatively titled “Recent Advances In Craniofacial Reconstruction,” for Academic Press in London. This chapter will cover the work I did for the Computational Forensics LDRD I have been involved in, visualizing facial skin structure from predictions based on skull structure and morphing facial masks to fit these predictions. Along these lines I have done some work to utilize the morphing procedure for the prediction itself. This project has resulted in two local TV spots, a Brazilian TV spot and now an ORNL poster representing the work which will be displayed at Tyson McGee Airport.

Name: Edward L. Frome

Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
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Key Skills: Biostatistics, Computational Statistics, Epidemiology

Education: Ph.D., Statistics & Biometry, Emory University (1972)
M.S., Statistics, University of Florida (1966)
B.S., Physics, University of Florida (1964)
Postdoctoral Fellow, Anesthesiology, Emory University (1973)

Professional Experience:

1981 - 2002 **Senior Research Staff,** Statistics Group, Computer Science and Mathematics Division, ORNL. My research is in biostatistics, statistical epidemiology, statistical computing, and the analysis of large-complex data sets. I am currently the coordinator of the Section's Biometrics Project (research in biostatistics and collaboration with scientists in the ORNL's Life Sciences Division and Center for Epidemiologic Research, Oak Ridge Institute for Science and Education). I have developed regression methods for the analysis of discrete data, censored data, and for low-dose extrapolation. These methods are used in the analysis of biological experiments in radiation carcinogenesis, respiratory toxicology, and experimental genetics. I have developed new statistical methods for use in life table analysis in occupational epidemiology

1998 – 2002 **Adjunct Professor,** Department of Statistics, University of Tennessee at Knoxville

1997 – 2002 **Adjunct Professor,** Department of Biostatistics, University of North Carolina

1986 – 1997 **Adjunct Associate Professor,** Department of Biostatistics, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina. Member of the Research Planning Group for the ORAU-UNC collaborative epidemiologic studies of nuclear industry employees (1980-1994). I worked with graduate students and faculty from the School of Public Health that were involved in these and subsequent related studies.

Professional Societies:

Member of the Oak Ridge Reservation Health Effects Subcommittee (ORRHES), of Agency for Toxic Substances and Disease Registry (ATSDR/CDC) (2000 - 2002)

Member of the City of Oak Ridge Environmental Advisory Board (2000 - 2002)

Statistical Consultant for *Radiation Research Society* (1998 – 2002)

Name: George A. Geist II (Al)

Position: Group Leader
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Education: B.S., Mechanical Engineering, North Carolina State University, (Summa Cum Laude) (1983)
B.A., Mathematics, Duke University, (Magna Cum Laude) (1978)
B.A., Psychology, Duke University, (with distinction) (1978)

Professional Experience:

2001 Present	Group Leader, Network and Cluster Computing Group, Computer Science and Mathematics Division (CSMD). In this capacity he conducts research, secures, plans and directs several projects within the division and works with program managers and sponsors to help develop new programs such as the Scientific Discovery through Advanced Computing (SciDAC) Initiative.
1999-2001	Computer Science Section Head (distributed computing, network research, and storage research groups) CSMD
1992-1998	Computer Science Group Leader CSMD
1984-1992	Computer Scientist, Engineering Physics and Mathematics Division
1983-1984	Mathematician, Computer Sciences Division, ORNL
1982-1983	Research Assistant, Mechanical Engineering Department, NCSU

Professional Societies: Phi Kappa Phi, Tau Beta Pi
Society for Industrial and Applied Mathematics

Name: Gary E. Giles, P.E.

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
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Education: Bachelor of Aerospace Engineering - Ga. Tech., 1970
M.S. Mechanical Engineering - Ga. Tech., 1973
(Thesis in computational fluid dynamics of rapidly converging diverging rocket nozzle)

Experience: More than twenty-five years professional experience in computational heat transfer and fluid flow in both analysis and code development.

Major code developments include: HEATING6, a general multi-dimensional conduction heat transfer code; HTAS1 and HTAS2 Nuclear Fuel shipping cask analysis codes; NORVEX (NASA Oak Ridge Void Experiment) code which simulates a thermal energy storage device under microgravity conditions; LCME which simulates conjugate heat transfer within a Large- Scale Climate Moderating Envelope, a town-sized energy reducing envelope.

Analysis experience includes: thermal analysis for the NRC of nuclear fuel shipping casks; thermal stress analysis of the Y-12 Rheocasting Facility; design of thermal protection of satellites from directed energy weapons; and thermal analysis of laser and thermal annealing of semiconductors. Thermal analysis of HSSI UCSB irradiation experiment that required simulation of 28 heaters, and optimization to assure that design can meet thermal requirements.

Manufacturing related code developments include BEPLATE, which simulates the electrodeposition of materials on complex shape mandrels using the boundary element method.

From 1988 until 1995 provided thermal analysis support for the ANS and HFIR reactor safety analysis.

Name: Charles Glover

Position: Research Staff Member, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Email: cgq@ornl.gov

Research Interests: Sensor fusion, bias estimation.

Education: Ph.D., Nuclear Physics, Florida State University (1980)
B.S., Physics and Mathematics, Texas A&M (1974)

Professional Experience:

1986-Present	**Research Staff Member,** Complex Systems Group, Computer Science & Mathematics Division, ORNL, Off-site Assignment.
1986	**Visiting Research Scientist,** Institute for Beam Particle Dynamics, Physics Department, University of Houston.
1984-1986	**Research Staff Member,** Complex Systems Group, Computer Science & Mathematics Division, ORNL
1980-1984	**Research Associate,** Indiana University Cyclotron Facility.
1977-1980	**Research Assistant,** Physics Department, Florida State University.
1976	**Teaching Assistant,** Physics Department, Florida State University.
1975-1976	**Research Assistant,** Physics Department, Texas A&M (Commerce).
1973-1975	**Teaching Assistant,** Physics Department, Texas A&M (Commerce).

Professional Societies: Member, APS
Member, IEEE
Member, SPIE
Member, International Neural Networks Society

Name: Richard C. Goldfinger

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
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Key Skills: Computer modeling and simulation using C++, Java, Visual C++ and Windows programming (MFC), CORBA.
Development of physics models and FORTRAN computer codes for fusion research.
Preparation and manipulation of large data sets for use in a major plasma-modeling code. Expertise gained with this code is used in interpretation, diagnosis, and projections of plasma physics experiments.
Graphics packages, scientific visualization.
Numerical analysis techniques, data analysis, applied mathematics.
Modeling of low-energy nuclear reactions and comparison with cross-section data as part of doctoral research.

Education: B.A., Physics, Case Western Reserve University, 1972
M.S., Physics, Case Western Reserve University, 1974
Ph.D., Nuclear Physics, Case Western Reserve University, 1976
Pellissippi State Technical College, WWW Development with Java, 1998; C++, 1995

Experience: Optimization and uncertainty analysis in support of complex, non-linear systems using SuperCode (C++/UNIX); intelligent agent software development in Java.

Java, C++, Visual C++, and Windows programming. Work involved nuclear reactor accident code: object-oriented code development as part of deadline-driven, team project incorporating new scientific and engineering models; porting 16-bit code to Windows NT and Windows 98, GUI building, DLL's. Migrated code to a client-server application using Java and CORBA. Received a Technical Achievement award in 1997 for support of this project.

Assigned to a four-year collaboration with Princeton Plasma Physics Laboratory, Princeton, New Jersey, in support of their fusion experiment. Work involved the preparation and manipulation of large data sets for use in a large plasma analysis code (TRANSP). Responsible for development

of new scientific models incorporated into TRANSP. Done in FORTRAN using UNIX on workstations and VAX mainframes.

Worked with Fusion Energy Division at ORNL to develop computer codes and physics models for plasma physics research. Emphasis was on understanding the interaction of radio-frequency waves with ionized plasmas. Topics included: modeling of plasma heating, wave propagation, and current drive; calculation of magnetic fields and flux surfaces in complex 3D geometry; equilibrium and stability of plasmas; analysis of experimental data.

Developed ray-tracing code, RAYS, that has been used by many labs in the U.S. and other countries. Collaborated with researchers in the USSR modeling electron cyclotron heating in Russian stellarators. Collaboration involved developing codes to run on a DEC MicroVAX, and using code with scientists in Moscow for several weeks. Work was done in FORTRAN on a variety of computer platforms; numerical analysis and applied mathematics were a large portion of the effort. Received a technical achievement award in 1990 for support of US - Soviet Collaboration on RF Heating.

Graduate Research Assistant performing dissertation work on low energy direct nuclear reaction theory. Taught freshman and sophomore physics lecture courses and labs to Case undergraduates.

Name: Orlando J. Gonzalez D.

Position: Graduate Research Assistant
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Key Skills: Computational Physics, Condensed Matter Theory

Education: Bachelor of Science, Physics Major;
Universidad Central de Venezuela, 1996

Ph.D. Physics,
University of Cincinnati, expected Fall 2003

Experience: I am working with Professor Mark Jarrell (University of Cincinnati) and Dr. Thomas C. Schulthess (ORNL). We are studying Cluster Theories, which are used to calculate the properties of any substitutionally disordered system. In particular, we are comparing two of such theories: Molecular Coherent Potential Approximation and Dynamical Cluster Approximation.

I was a teaching assistant from September 1998 to September 2000 in the Department of Physics, at the University of Cincinnati. Duties involved leading recitations and laboratory sessions for introductory physics courses. I am a recipient of the University of Cincinnati Graduate Tuition Scholarship from 1998.

Name: Andrey A. Gorin

Position: Senior Research Staff
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Telephone: (865) 241-3972
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E-mail: gorinaa@ornl.gov

Key Skills: Structural Genomics / Metabolic Pathway Data Mining.

Education: 1991 - Ph.D. Physics and Mathematics (Molecular Biophysics), Moscow Physics and Technology Inst. and Engelhardt Inst. of Molecular Biology.
1984 - BS. Natural Sciences (Physical Chemistry), Moscow Physics and Technology Institute

Experience: Dr. Andrey Gorin is a staff member of Computational Biology Group, Computer Science and Mathematics Division. From 1996 to 2001, Dr. Gorin was at Sloan-Kettering Institute (Memorial Sloan-Kettering Cancer Center, NY), last three years as Senior Scientist at Cellular Biochemistry and Biophysics Program.

Dr. Gorin research interests include: algorithms for the simulations of the biomolecular complexes, application of the structural information for genome annotation and metabolic pathway data mining, recognition principles in the nucleic acid - protein complexes, analysis of the structural databases.

Dr. Andrey Gorin received his Ph.D. in 1991 from Moscow Institute of Physics and Technology and Engelhardt Institute of Molecular Biology (Russian Academy of Sciences). During his scientific career he published more than 40 papers (20 of them since 1998) in the primary scientific journals in the computational and structural biology areas, including Proceedings of The National Academy of Sciences of the US, Nature Structural Biology and Journal of Molecular Biology, and has outstanding personal citation index. In 1996 Dr. Gorin served as a reviewer for NSF and since 1999 writes internal reviews for Journal of Biomolecular Structure and Dynamics Editorial Board. Dr. Andrey Gorin's work was regularly presented at the most prestigious conferences in the field such as Gordon Research Conferences and Keystone Conferences. In 2000-2001 Dr. Gorin gave invited talks for leading research institutions in computational biology and genomics areas: Novartis Genomic Foundation, Computational Biology of IBM T.J. Watson Research Center, Whitehead Genome Center of MIT.

Name: Leonard J. Gray

Position: Senior Research Staff
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Key Skills: Boundary Integral Analysis, Applications in Materials Science and Electrochemistry

Education: 1968 B.S., M.S. Mathematics, Polytechnic Institute of New York
1973 Ph.D. Mathematics, California Institute of Technology
Ph.D. Thesis: *Essential Central Spectrum and Numerical Range in a von Neumann Algebra*
Thesis Supervisor: Professor Charles DePrima

Employment: 8/87 - 1/89: Visiting Senior Scientist, IBM Bergen Scientific Centre, Norway
4/74 - Present: Research staff, Computer Science and Mathematics Division, ORNL
9/77 - Present: Dept of Mathematics (Adjunct), University of TN

Editorial
Board: Engineering Analysis with Boundary Elements, 1990 - Present

Name: Warren Grice

Position: Postdoctoral Research Associate, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Email: gricew@ornl.gov

Research Interests: Quantum Information, Quantum Optics, Nonlinear Optics, Ultrafast Processes.

Education: Ph.D., Optics, University of Rochester (1997)
B.S., Physics, Western Kentucky University (1990)

Professional Experience:

01/2002-Present **Postdoctoral Research Associate**, Spallation Neutron Source, ORNL

01/2001-Present **Postdoctoral Research Associate**, Center for Engineering Science Advanced Research, Computer Science and Mathematics Division, ORNL

1998-2000 **Assistant Professor of Physics**, Southern Illinois University Edwardsville.

Professional Societies: Member, Optical Society of America (OSA)
Member, American Physical Society (APS)

Name: Yi Guo

Position: Postdoctoral Research Associate, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Email: guoy@ornl.gov

Research Interests: Distributed intelligent systems: Architecture, control, networking, artificial Intelligence. Cooperative and autonomous mobile robotics: Architecture design, motion/path planning and control, performance analysis, human-in-the-loop design, real time system development. Dynamic systems and control: Nonlinear control, global hybrid control, large-scale systems, decentralized control, robust control, H_∞ control, fuzzy control. Power system dynamics and control: transient stability, voltage regulation, global hybrid control of large power systems.
Modeling and simulation of complex dynamic systems.

Education: Ph.D., Systems and Control, University of Sydney, Australia (1999)
M.S.E.E., Automatic Control Theory and Applications, Xi'an University of Technology, China (1995)
B.S.E.E., Electrcial Engineering, Xi'an University of Technology (1992)

Professional Experience:

05/2000-Present Postdoctoral Research Associate, Complex Systems Group, Computer Science and Mathematics Division, Oak Ridge National Laboratory.
Focus on cooperative and autonomous mobile robotics. Developed rough terrain navigation algorithm for nonholonomic mobile robots; Developed distributed 3D motion planning algorithm for cooperative mobile robot teams; Implemented motion planning and navigation algorithms in 3D vehicle planner and control simulator, using C, RTC (Real –Time Communications); Implemented motion planning and navigation algorithms on groups of Nomadic Technologies Nomad 200, Real Word Interface (RWI) All TerRain Vehicles (ATRV) Mini-robot, using C/C++, TCP/IP Sockets.

1999-2000- **Postdoctoral Research Fellow,** University of Western Sydney -- Faculty of Science and Technology, Australia.

Professional Societies: Member, IEEE

Name: Bryan C. Hathorn

Position: Postdoctoral Scholar
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Key Skills: Computational Chemistry and Kinetics

Education: Bachelor of Arts, Chemistry and Mathematics, Haverford College, 1991
Ph.D., Theoretical Chemical Physics, CA Institute of Technology, 1999

Experience: Postdoctoral scholar in the Computer Science and Mathematics Division
Bryan has interests in many areas of the arena of chemical and physical phenomena, and has authored a dozen peer-reviewed publications in diverse areas including polymer kinetics and dynamics, atmospheric chemistry, statistical mechanics and kinetic theory.

Name: Jose L. Hernandez

Position: Research Associate
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Key Skills: Meterological and oceanographic instrumentation maintenance. Research in multidisciplinary studies in Earth Sciences and modeling. Energy and gases exchange at sea surface and climate are subject of interest.

Education: Ph.D., Marine Sciences, University of Puerto Rico (1999)
M.S., Physics, University of Puerto Rico (1996)
B.S., Physics, National University of Colombia at Bogota (1986)

Professional Experience:

01/2001-Present: Research Assistant, Climate Dynamics, Computer Science and Mathematics Division. Research involving climate studies and computer modeling experiments (CCM3, NCAR community Climate Model).

11/2000-11/1999: Postdoctoral position, USRA/NASA Goddard Space Flight Center, Laboratory for Atmospheres and Mesoscale Atmospheric Processes Branch. Research involving studies of satellite derived oceanic data analysis and climate.

08/1992-03/1990: In charge of Physical Oceanography and Electronic Instrumentation Laboratory. Marine Research Institute of Punta Betin.

03/1990-01/1989: Physics Lecturer, University of Los Andes, Bogota, Colombia, Physics and Math Department

06/1989-01/1987: Physics Lecturer, University Antonio Narino, Bogota, Colombia, Physics and Math Department

Professional Societies: American Geophysical Union

Name: David M. Hetrick

Position: Group Leader
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Group: Modeling and Simulation Group
Phone: (865) 576-7556
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Email: dmh@ornl.gov

Key Skills: Environmental Fate and Transport Modeling
Pharmacokinetics Modeling
Numerical Modeling
Scientific Computer Programming

Education: B.S. in Mathematics and Physics, University of Wisconsin at River Falls (1974)
M.S. in Applied Mathematics, Michigan State University (1976)

Experience: David Hetrick is the Group Leader of the Modeling and Simulation Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory. The Group has 28 computer-oriented professionals focused in the areas of computational solutions to engineering and physics problems. Eleven members of the staff have Ph.D. degrees and fourteen have M.S.-level degrees. The Group has expertise in heat transfer and fluid flow, structural and fracture mechanics, and computational physics.

In research, Mr. Hetrick has worked on a variety of computational problems including modeling sediment transport in rivers and estuaries, pollutant transport via environmental models, pharmacokinetics modeling in the human body, and evaluating neutron cross sections of structural materials for fusion reactor applications. He has authored/coauthored 81 reports and papers in the open literature and is coeditor of one book.

Professional Societies: American Association for the Advancement of Science

Name: Lee M. Hively, Ph.D.

Position: R&D Staff
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Education: Ph.D. Nuclear Engineering. University of Illinois, Urbana, IL. (1980).
M.S. Physics, University of Illinois, Urbana, IL. (1971).
B.S. Engineering Science, Pennsylvania State University, University Park, PA. (1970).
B.S. Mathematics, Pennsylvania State University, University Park, PA. (1970).
B.A. General Arts and Science, Pennsylvania State University, University Park, PA. (1970).

Positions: Research Staff, Computational Science and Engineering Division (2001-present).
Development Staff, Engineering Technology Division, ORNL (1989-2001).
Research Staff, Fusion Energy Division, ORNL (1988-1989).
Detailee, U.S. Dept. of Energy Headquarters, Germantown, MD. (1986-1988).
Research Staff, Health and Safety Research Division, ORNL (1984-1986).
Plasma Systems Physicist, General Electric Company (1980-1984).
Teaching and research assistant, University of Illinois, Urbana, IL. (1974-1980).
Member of Research Staff, Western Electric Company, Princeton, NJ (1970¯1974).

Experience: Thirty years of research and engineering development, including nonlinear and chaos analysis of experimental data for detection of condition change, nuclear criticality safety and shielding, health and safety research, plasma performance and fusion product confinement in tokamak reactors, nonlinear constrained optimization, railgun launcher modeling, computational physics.

Name: Betsy C. Horwedel

Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division

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Key Skills: Environmental Data Management, Statistical Consulting, Oracle, SYBASE, SAS, Microsoft Access, SQL, HTML, UNIX, PERL

Education: BA, Mathematics, Transylvania University (1973)
MBA, Management Science, University of New Mexico (1975)

Professional Experience:

1976 – 2002 **Software Engineer,** Database Developer / Database Manager/ Statistical Analyst for the Atmospheric Radiation Measurement Program, Environmental Science Division, 1998-present (half-time) Data Coordinator for the Distributed Active Archive Center, Environmental Sciences Division, 1998-present (half-time). Environmental Data Consultant to the Oak Ridge Environmental Information System (1997 - 1998). Information Management for the Clinch River Environmental Restoration Program (1993 - 1997). Data Analyst for the Department of Environmental Monitoring in the Environmental Compliance Division (1983-1993). Data Analyst for the Transportation Research Group of Energy Division, 1976- 1983

Name: Barbara L. Jackson

Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division

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Key Skills: Scientific database management, landscape metrics, human health and ecological risk assessment, statistical analysis, Web applications, geographic information systems, sensitivity and uncertainty analysis, spatial statistics.

Professional Experience:

1985 – 2002 **Research staff,** Computer Sciences and Mathematics Division, Oak Ridge National Laboratory. Software engineer, data analyst, database manager, scientific programmer, statistical analyst for the Environmental Sciences Division, 1985 – present. Database manager for the Life Sciences Division, 2000 – present.

Name: William L. Jackson

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences & Engineering Division
Group: Modeling and Simulation Group
Phone: (865) 574-4443
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Education: B.S., Engineering Physics, University of Tennessee, Knoxville, 1977

Key Skills: Computer programming languages and applications WEB/unix: ORACLE, PL/SQL, SQL*Plus, HTML, Pro C, Java Script, AVS, PC: Visual C/C++, Visual Basic, Visual FoxPro, Access, Excel, All platforms: Java, Perl, FORTRAN, Assembler.

Experience: WEB applications for data access and display, graphics, database queries and updates, password security, interactive systems and software distribution.
WEB pages that run FORTRAN or C applications and display the results as text or graphs.
WEB and diskette software distribution and setup systems.
GUI Windows-based data tracking systems.
Transportation modeling.
Atmospheric transport modeling for contaminant releases.
Modeling heat pump/air conditioning systems, mixed refrigerants, absorption systems, Stirling cycle systems.
Heating and air conditioning loads and seasonal performance calculations for buildings.
Regional recruiting and retention potential modeling using demographics to determine military unit supportability.
Regional disaster impact modeling.

Mr. Jackson has developed many tools including graphics capabilities, GUI interfaces and a variety of other procedures that have proven useful in several new applications by reducing the initial development time and improving the overall quality and appearance of the products.

Name: Paul E. Johnson

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Geographic Information Science and Technology Group
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Key Skills: Transportation Routing Modeling
Geographic Information Sciences
Applications Programming

Education: B.A. summa cum laude in Geography, University of Minnesota at Duluth (1974)
M.S. in Geography, University of Tennessee (1978)

Experience: Mr. Johnson is a member of the Geographic Information Science and Technology Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory (ORNL). He has been employed at ORNL since 1978. Over that time, he has been involved in a variety of projects dealing with transportation modeling, geographic information sciences, applications programming, computational analysis, and project management.

For most of his career at ORNL, Mr. Johnson has worked on research projects involving radioactive and other hazardous material transportation routing issues. He has been responsible for the maintenance of the HIGHWAY (roadway) and INTERLINE (rail and waterway) routing models and databases and has managed the development of the Transportation Routing Analysis Geographic Information System (TRAGIS). TRAGIS has replaced the legacy HIGHWAY and INTERLINE models. TRAGIS is the accepted U.S. Department of Energy routing analysis tool used for both risk assessments and shipment planning. This work has been for the DOE National Transportation Program. Mr. Johnson has also worked extensively on rail infrastructure projects for the U.S. Department of Defense and is the project manager for this effort at ORNL. He authored/coauthored over 30 reports and papers in the open literature. He is a member of the Association of American Geographers.

Name: Timothy K. Jones

Position: Technical Staff System Analyst
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
Group: Computer Systems and Operations Group and
Scientific Applications Support Group
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Experience: Tim Jones has worked in the High Performance Computing's System Group for the past three years. Cross-matrixed within the group to perform a wide variety of tasks that include Scalable-Parallel system maintenance, system programming and testing, software application management, user and account services, High Performance Storage System maintenance, server and workstation installation and maintenance.

Prior experience includes work in a variety of Data Centers at major DOE facilities including the Y-12 National Weapons Complex, and the K-25 East Tennessee Technology Park.

Committees: SuperComputing 2001 Booth Coordinator, November 2001
Division Computer Security Officer, January 1999
Site Division Environmental Protection Officer, October 1996
Site Division Procedures Coordinator, April 1994
Procedure Development Committee, December 1993
Technical Services Matrix Pilot Program, October 1993

Awards: UT-Battelle Community Service Award, December 2001
Certificate of Recognition for Filing a Patent, May 1996

Name: David Jung

Position: Research Staff Member, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Robotics; Action Selection and Behavior Based Planning, Joint Cooperative Planning, Dynamical and Chaotic systems in cognition, High-level vision. Persistence; Operating Systems & Languages. Distributed Object Systems. Human-Computer Interaction.

Education:
Ph.D., Robotics, University of Wollongong, NSW, Australia (1998)
Honours 2A, Computer Science, University of Adelaide, Adelaid, SA (1994)
Graduate Certificate, Software Engineering, University of South Australia, Adelaide, SA (1993)
B.S., Computer Science and Applied Mathematics, University of Adelaide, Adelaide, SA (1991)

Professional Experience:

1999 Present **Rearch Staff Member**, Oak Ridge National Laboratory. Cooperative Robotics: Basic research into robotic systems, multi-robot simulation and industrial applications (eg. simulation of artificial evolution).

1998-2000 **Postdoctoral Research Associate,** Oak Ridge Associated Universities, Oak Ridge National Laboratory. Cooperative Robotics: Basic research into cooperative robotic systems, multi-robot simulation and industrial applications (eg. surface coal mining).

Professional Societies:
Member, IEEE
Member, Planetary Society

Name: Eunok Jung

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
Phone: (865) 241-3937
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Email: junge@ornl.gov

Key Skills: Mathematical Modeling in Biomedical and Engineering Applications, Computational Fluid Dynamics, Optimal Control Techniques, Scientific Computing

Education: Mathematics, Courant Institute in New York University, Ph.D., 1994-1999
Mathematics, Korea University in Korea, M.S., 1989-1991
Educational Mathematics, Korea University in Korea, B.A., 1984-1988

Experience: Eunok is currently a research staff member in Computational Mathematics Group in the Computer Science and Mathematics Division (CSMD) at ORNL. She started to work in ORNL as a Postdoctoral fellow on September 1999 and became a regular staff member on July 2001. Eunok has been involved in Climate modeling with J. Drake in CSMD. She has done the computational biofluid research and biomedical application, in particular, valveless pumping and simulations of cardiopulmonary resuscitation (CPR) with C. Peskin at Courant Institute at New York University (NYU) and C. Babbs at Purdue University. She also made collaborations for the biomedical application, optimal control technique in Tuberculosis model with S. Lenhart at University of TN and Z. Feng at Purdue University. She has been worked on the laser phase research using optimal control techniques with S. Lenhart, V. Protopopescu, and Y. Braim at ORNL. Eunok has written the two proposals at ORNL. One is CPR using optimal control that will be submitted to the Seed Money Fund and the other is the simulations of the standard CPR: An immersed boundary heart model coupled with an electrical lumped parameter circuit model for the circulation that will be submitted to the National Institutes of Health (NIH).

Outside the Laboratory, Eunok has been the invited speaker at several major national and international conferences, such as Society for Industrial and Applied Mathematics (SIAM), Association for Women in Mathematics (AWM), Applied Mathematics Forum at Korea, and Workshops on Issues in Cardiovascular-Respiratory Control Modeling at Graz, Austria. She also invited in the major universities including Tulane, NYU, Harvard, and University of TN and KAIST, Yonsei University,

Korea University, and Iwha University in Korea. Eunok is currently a member of the Association for AWM, SIAM, Society of Mathematics in Biology (SMB) and will be a local committee organizer of the annual meeting of SMB that will be held in Knoxville in 2002. Her research that is the extended work of her PhD thesis was published the ORNL Reporter and it will also be published in the ORNL Review and New Scientist Journal. Eunok received two travel awards from AWM in 1999 and 2000, a fellowship from ORNL, and teaching assistantships from Courant Institute and Korea University. She had teaching experience in linear algebra and mathematical thinking at NYU as a lecturer and several calculus classes, linear algebra, complex, functional analysis at NYU and Korea University as a teaching assistant.

Name: Theodore Kaplan

Position: Senior Research Scientist
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Education**:** 1966 - S.B. Electrical Engineering, Massachusetts Institute of Technology
1968 - S.M. Solid State Physics, Massachusetts Institute of Technology
1972 - Ph.D. Solid State Physics, Massachusetts Institute of Technology

Ph.D. Thesis: *Thermal Mechanisms for Threshold and Memory Switching in Amorphous and Crystalline Semiconductors,*
Thesis Supervisor: Professor David Adler

Employment:
9/72 - 12/96: Solid State Division, ORNL
1/97 - Present: Computer Science and Mathematics Division, ORNL

Name: D. Matthew Kelleher, Jr.

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulations Group
Phone: (865)574-8716
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E-mail: kellerdm@ornl.gov

Key Skills: Java, Visual Basic, Fortran, C, C++, PC assembly, SAS, Tcl/Tk, MicroStation MDL. IBM personal computers, Unix-based workstations, VAX computers, and IBM mainframes.

Chemical engineer and software engineer with more than 20 years experience in developing engineering-oriented software primarily for uranium enrichment. Experienced in developing large-scale mission-critical software systems and familiar with uranium enrichment plant operations and technology and related nuclear fuel cycle activities.

Education: B.S. Chemical Engineering, Iowa State University, 1976, Tau Beta Pi.
M.S. Computer Science, University of Tennessee, Knoxville, expected 2002.

Experience: Developing a client-server application using Java for the Visual Human research project that demonstrates the use of client-server techniques to facilitate modeling human systems.

Used a computer model to predict performance of alternate coolants proposed to replace existing chlorofluorocarbon (CFC) coolant used in US gaseous diffusion plant cooling systems. These studies identified alternate coolants that may limit production and alternate coolants with operating characteristics that require system modifications.

Developed computer models that calculate the flows, pressures, and compositions of the process gas at the top of the Paducah and Portsmouth Gaseous Diffusion Plant cascades. Codes were used by plant engineers to predict behavior of the proposed alternate coolants in the cascades.

Developed and documented nuclear fuel cycle models for the Defense Intelligence Agency.

Developed programs on a MicroStation CAD system that enabled CAD operators to repair damaged Oak Ridge site map data quickly and easily.

Developed a graphical user interface using Visual Basic for the Improved Multisite Productivity Program (described below).

Developed the Improved Multisite Productivity Program to calculate and optimize production from the two US gaseous diffusion plants. Selected the best engineering algorithms from existing plant programs and from other sources to create a new program that produces superior results. Wrote an easy-to-use full-screen DOS-based user interface for the program. Used modern software development methods, such as object-based design techniques, to maximize maintainability and flexibility. Received a 1993 Martin Marietta Energy Systems Technical Achievement Award for this work.

Showed that current and future production costs of European uranium enrichment company Eurodif SA are higher than comparable US production costs by analyzing US plant data, reported Eurodif production, and Eurodif financial statements. Determined that the uranium enrichment plants pay competitive prices for the $500 million of power purchased annually by analyzing electric power purchase data.

Developed transient analysis programs to calculate changes in the flows and material concentrations over time in gaseous diffusion plants. Used efficient algorithms to implement calculations specified by plant engineers and obtained from other sources. Validated programs using plant data. Developed graphics packages for the programs that clearly showed flow and concentration changes over time. Followed software design and development methods that made the programs easy to maintain and improve. Used programs to calculate plant uranium isotope concentration and flow changes when plant-operating conditions changed.

Developed a system that combined, analyzed, and reported uranium inventory data from the nuclear materials accountability systems of the US uranium enrichment plants.

Helped develop new models and improve existing models of recirculating cooling water systems at the US gaseous diffusion plants.

Name: Ahmed Khamayseh

Position: Senior Research Scientist
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Division: Computer Science and Mathematics Division
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Key Skills: Applied Mathematics, Differential Geometry, Numerical Analysis, Numerical Solution of Partial Differential Equations Arising in Physics, Computational Geometry, Computational Mesh Generation, Computational Fluid Dynamics

Education:
- Ph.D. Mathematical Sciences, Mississippi State University, Starkville, MS, 1994
- M.S. Mathematics, Mississippi State University, Starkville, MS, 1990
- B.S. Mathematics, Alquds University, Jerusalem, 1987

Experience:

Present	Senior Research Scientis**t**, Computer Science and Mathematics Division
2000 - 2001	Senior Engineer, CFD Research Corporation, Huntsville, AL
1996 - 2000	Technical Staff Member, Applied Physics Division, LANL
1994 - 1996	Postdoctoral Research Associate, Center for Nonlinear Studies, LANL
1991 - 1994	Research Assistant, NSF Eng. Research Center, MS State University

Reviews:
Journal of Computational Physics
Journal of Computers and Mathematics with Applications
Journal of Heat Transfer
International Journal for Numerical Methods in Engineering
Journal of Differential Equations
Journal of Applied Mathematics Letters

Name: Yoon-Ho Kim

Position: Wigner Fellow, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Quantum optics and the foundations of quantum mechanics, including the study of the nature of quantum entanglement, various quantum interference effects, preparation of multi-particle entangled state and its use in quantum information processing, preparation and measurement of Bell-states, quantum cryptography, quantum lithography, and nonlocality.

Education: Ph.D., Applied Physics, University of Maryland (2001)
M.S., Physics, Ball State University (1996)
B.S., Physics, Yeungnam University (1995)

Professional Experience:

2001-Present **Eugene P. Wigner Fellow,** Complex Systems Group, Computer Science & Mathematics Division, Oak Ridge National Laboratory.

1997-2001 **Research Assistant,** Department of Physics, University of Maryland.

1996-1997 **Teaching Assistant,** Department of Physics, University of Maryland

1995-1996 **Teaching Assistant,** Department of Physics, Ball State University

Professional Societies: Member, APS

Name: Amy L. King

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Geographic Information Science and Technology Group
Phone: (865) 576-1509
Fax: (865) 574-4634
Email: kingal@ornl.gov

Key Skills: Project management
Photographic Interpretation
Geographic Information Analysis

Education: B.A. in History (cum laude), Maryville College (1989)

Experience: Ms. King has extensive experience managing multi-million dollar remote sensing projects for the Department of Energy and the Department of Defense. Ms. King manages remote sensing projects focused on the characterization and monitoring of hazardous waste sites and the detection and identification of unexploded ordnance. She was instrumental in the development of the Footprint Reduction Process– a process designed to use remote sensing data and historic site information to identify areas of federally-owned lands that have not been contaminated by federal hazardous waste activities. She led the effort to transfer the Footprint Reduction Process from the Department of Energy to the Department of Defense for use in identifying lands not impacted by warfare training exercises. Ms. King managed threatened and endangered species projects, which focused on identifying and mapping plant and animal species in need of management on the 35,000-acre DOE Oak Ridge Reservation. She has also developed new aviation safety reporting mechanisms and procedures for safe aerial survey activities.

Prior to her involvement in remote sensing research and applications, Ms. King was a research associate in the Health Sciences Research Division of ORNL, focusing on assessing risks to human health from hazardous waste sites across the country. She conducted Health Assessments for the Agency for Toxic Substances and Disease Registry (ATSDR), was liaison between the ATSDR and the DOE Oak Ridge Operations Office, developed a strategy for setting preliminary remediation goals for CERCLA waste sites, and developed a strategy for determining institutional controls for DOE hazardous waste sites.

Ms. King has authored or co-authored more than 60 publications, including journal articles, conference proceedings, technical reports, and strategic and quality assurance plans.

Name: John R. Kirkpatrick, Ph.D., P.E.

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
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Fax: (865)576-0003
E-mail: kirkpatricjr@ornl.gov

Education: B.A. in M.E. (fluid dynamics and heat transfer) - Rice, 1966
M.S. in M.E. (fluid dynamics and heat transfer) - Rice, 1968
Ph.D. in M.E. (computational fluid dynamics) - Rice, 1970

Key Skills: Dr. Kirkpatrick has over thirty years experience in fluid dynamics, computational fluid dynamics, heat transfer, and diffusion problems. He is experienced both with numerical analysis of such problems and in practical engineering applications.

Experience: Dr. Kirkpatrick spent more than six years at Los Alamos National Laboratory doing CFD work in explosive-driven shock problems. His work included both calculation of such phenomena and development of computer methods for doing such calculations in one and two dimensions.

In twenty-five years at Oak Ridge, Dr. Kirkpatrick has done computational fluid dynamics (CFD) work on a rotating, stratified flow in air and other gases, and in buoyancy driven free convection in air and in liquid UF6. For more than a decade, he was extensively involved in the uranium centrifuge separation project. He has done considerable work in conductive, convective, and radiant heat transfer. Problems he has studied include analysis of the effect of manufacturing defects on the heat transfer in High Flux Isotope Reactor (HFIR) fuel plates, and also modeling of the effect of exposure of the contents of reactor fuel shipping casks to a fire. He was responsible for a chapter of the Safety Analysis Report (SAR) for the HFIR and contributed to other portions. He was responsible for a chapter of the Safety Analysis Report for Packaging (SARP) for two different reactor fuel transport casks and contributed to other portions of those SARPs as well as to SARPS on other casks. He has done heat transfer work for the Atomic Vapor Laser Isotope Separation (AVLIS) project. He has done work in corrosion of uranium by hydrogen and water vapor, and in diffusion of hydrogen through an oxide surface layer on palladium. He has modeled the time-dependent diffusion of dopant materials in liquid and refreezing semiconductors including the segregation of the dopants at the boundary between the liquid and solid.

He has used a Monte Carlo numerical model to simulate growth and recrystallization of grains in steels. He has modeled fluid flow and heat transfer in a metal casting process. He has calculated theoretical infrared spectra and worked on methods to compare the results with data. He has done extensive work in transport of gases in vacuum and in corrosion processes in vacuum systems. He has modeled diffusion of impurities into inclusions in metals and the subsequent growth of the inclusions.

Professional Societies: Professional Certification Licensed Professional Engineer since 1978 (license currently inactive)

Name: James A. Kohl

Position: Research Scientist
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Key Skills: Parallel and Heterogeneous Distributed Computing, Visualization of Parallel Program Behavior and Scientific Data, Computational Steering, Application Fault Tolerance, Graphical User-Interface Design.

Education: Ph.D., Electrical and Computer Engineering, University of Iowa (1994)
M.S.E.E., Electrical Engineering, Purdue University (1989)
B.S.C.E.E., Computer and Electrical Eng., Purdue University (1988)

Professional Experience:

07/1993-Present Research Scientist in the Network and Cluster Computing Group, Computer Science and Mathematics Division. Perform research on various aspects of parallel and heterogeneous distributed computing and visualization of parallel programs and data, for basic sciences and applied mathematics applications. Projects include: Common Component Architecture (CCA) Forum / Co-PI of SciDAC Center for Component Technology for Terascale Simulation Software (CCTTSS), Lead for "MxN" Working Group on Parallel Data Redistribution; Parallel Virtual Machine (PVM); XPVM – Graphical Console and Monitor for PVM; CUMULVS – Visualization, Computational Steering and Fault-Tolerance for High-Performance Scientific Simulations; Harness – Next-Generation Pluggable Adaptive Distributed Computing Environment; MatView – Scalable Sparse Matrix Visualizer.

09/1992-05/1992 Internship appointment for Summer/Fall, IBM Thomas J. Watson Research Center. Worked on the IBM Research PV prototype program visualization system. Designed & implemented X Window System widgets for graphically animating large data arrays using a scalable view technique.

Professional Societies: Kohl has been a member of the IEEE Computer Society and ACM SIGARCH, SIGSOFT and SIGCHI, and is a member of the Order of the Engineer, Eta Kappa Nu, Tau Beta Pi, Phi Kappa Phi, Golden Key, Phi Eta Sigma and Mensa International.

Name: Kara L. Kruse

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
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Key Skills: Computational Fluid Dynamics.
Numerical methods including finite elements, finite differences, and matrix methods.
Data analysis including regression techniques and visualization methods.
Verification and validation of simulation programs.
Scientific and applications programming of complex systems using procedural or object-oriented techniques.
Programming languages/tools: Fortran, C, C++, MathCad, MatLab, PV-Wave (visualization and data analysis language), SAS (statistics and regression language), Visual FoxPro (database language), Lisp, Assembly.
Computer systems: MacIntosh, PC, UNIX workstations (IBM RISC 6000, Sun SPARCstation, DECstation), VAX.

Education: M.S.E. in Engineering Science and Mechanics, 1994, University of Tennessee, Knoxville, TN. Major area: Computational fluid dynamics and numerical methods.

M.S.E. in Biomedical Engineering, 1982, Case Western Reserve University, Cleveland, OH. Major area: Finite difference modeling of physiological transport processes. Thesis: "Heat and Water Transport Dynamics in the Respiratory Tract: Distributed-Model Simulation."

B.S. in Physics, Math, Zoology, and Chemistry, 1978, Northwestern State University of Louisiana, Natchitoches, LA.

Experience: Simulated the fluid flow, heat transfer, and residual stresses in a powder injection modeling process using the commercial finite element code ProCast. Identified limitations of the ProCast code in solving the highly non-Newtonian fluid flow for the type of geometries used in the injection modeling process. With an improved version of the ProCast code, performed sensitivity analysis of the process parameters.

Ported a Fortran numerical simulation code from a Vax VMS system to an IBM UNIX workstation.

Developed database applications using FoxPro for Windows and the new object-oriented Visual FoxPro.

Performed verification and validation analyses on various military conflict simulation models. Performed parameter sensitivity studies using regression techniques, deciphered coded programs to determine the mathematical algorithm used, and analyzed the conceptual validity of the model design.

Developed a number of object-oriented user interfaces on UNIX workstations and on PCS using: 1) C and the Motif graphical user interface builder UIMX; 2) PV Wave and WaveWidgets; and 3) GoldWorks.

Programmed data analysis visualization programs using the PV Wave data analysis and visualization tool on DecStations.

Developed C programs for translating data in different database file formats between MacIntoshes and PCS.

Software Engineer, Picker International, Highland Heights, Ohio, 1984-1987
Developed complex Fortran and assembly language programs pertinent to the operation of Picker's product line of Magnetic Resonance Imaging machines. Wrote new code, deciphered and modified complex code borrowed from the CAT Scanner machines, tested software changes, and interfaced with customers to determine desired new features.
Jr. Research Assistant (post-graduate), Case Western Reserve University, Cleveland, Ohio, 1982-1984

Developed and tested on patients, a real-time Fortran program for measuring a pulmonary parameter indicative of lung disease. Incorporated the mathematics of a compartmental lung washout model in the program to obtain the functional residual capacity of the subject's lungs.

Name: James J. Kulesz

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
Phone: (865) 241-9219
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Key Skills: Explosion Hazards and Evaluation
Systems Integration
Project Management
Business Development

Education: B.S. in Physics, College of William and Mary (1971)
M.B.A. in Management/Finance, University of Texas at San Antonio (1977)

Experience: Jim Kulesz is a Program Manager for Special Projects in the Systems Engineering and Technology Group. He has over thirty years of professional experience involving explosion hazards evaluation, hazardous waste remedial investigations, centrifuge uranium enrichment, and project management. Mr. Kulesz developed business and capabilities for UXO detection, characterization, removal, and disposal; chemical and conventional munitions demilitarization; explosives disposal compliance activities; installation and facility closures; and management action process (MAP) plans for site closures.

Mr. Kulesz managed acquisition, storage, and delivery of centrifuge materials totaling $25 million per year. He performed financial analyses of alternate plant construction strategies and developed a 10-year forecast for material requirements, costs, and plant capacity expansion totaling over $270 million. He performed business and quality evaluations of manufacturers and resolved quality control problems. He instituted a statistical process control program that resulted in savings of $284,000 per year. Mr. Kulesz is currently developing technology concepts for Counter Terrorism, Homeland Security, and Defense initiatives including Terrorist Information Processing Sciences (TIPS), Sensor Networks (SensorNet) for chemical, biological, and nuclear releases, and DoD Objective Force logistics and battlefield visualization. Mr. Kulesz is the author or coauthor of over 35 publications and reports; coauthor of book Explosion Hazards and Evaluation, Elsevier, 1983, Russian translation in 1986, Chinese

translation in 1990; and sole inventor of gauge for measuring ultra-low gas pressures (Patent No. 3,744,318).

Mr. Kulesz is a member of the Sigma Xi Professional Society. He was formerly a Registered Environmental Property Assessor (inactive). He has had 40 hour SARA/OSHA training and Radiation Worker Training.

Name: Hwee Kuan Lee

Position: Postdoctoral Research Associate
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Email: leeh1@ornl.gov

Key Skills: Computer Simulations, Statistics or Applications of Thermodynamics

Education: Carnegie Mellon University, Pittsburgh, PA
PhD, Physics, May - 2001 Overall QP A: 3.89 *j* 4.00

National University of Singapore, Singapore BS (Hons)
Physics, August 1995 Honors ranking: 2nd Upper
Class ranking: Top 3 in class

Thesis Robert H. Swendsen (PhD) Advisor Ze Xiang Sheng (BS)

Research: PhD Thesis, Monte Carlo Simulations on Liquid-liquid Phase Experience TranSition

BS Thesis, Raman Spectroscopy of HMF Glasses and Optical Switching Material (2nd best project of the academic year)

Experience: Department of Physics, Carnegie Mellon University System Ad-Experience ministration (1996-1997)

Department of Physics, Carnegie Mellon University Teaching Assistant (1998-2000)

Name: Ronald W. Lee

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology
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Education: M.S., Computer Systems, Air Force Institute of Technology, December 1986, distinguished graduate
B.S., Information and Computer Science, Georgia Institute of Technology, March 1985, highest honor

Key Skills: Object-oriented and object-based software design and implementation (Java, C++, C)
Distributed object and client/server system development (Unix, NT/2000)
Network and internet/intranet services and tools
Unixsystem and applications tools and methods
GUI applications, interactive graphics, and data representation
Web interfaces and services
Sun Certified Developer for the Java 2 Platform
Sun Certified Programmer for the Java 2 Platform

Experience: Distributed Systems Researcher, Computational Sciences and Engineering Division. Lead architect and client GUI developer for version 4 of the Hazard Prediction and Assessment Capability for the Defense Thread Reduction Agency (DTRA). Performed air traffic analysis using Enhanced Traffic Management System (ETMS) data for the FAA, developing data cleaning tools, implementing graphic representations of sector characterization data, and writing analysis reports.

Computing Consultant, Computational Physics and Engineering Division, ORNL

Developed client-server software for hazard assessment and counter proliferation tools supporting the DTRA and the Defense Intelligence Agency (DIA). Helped develop the Java Nuclear Fuel Cycle Analyzer (NFCA) as a platform portable, Web-based and standalone application for assessing and analyzing the fuel cycles of potentially proliferant countries.

Computing Specialist, Computer Science and Mathematics Division. Responsible for design and implementation of object-oriented tools for data reduction and visualization, development of interactive tools for image processing and segmentation, DNA and protein sequence analysis

and annotation, relational and object-oriented database retrieval and storage, and client-server computational and data-retrieval systems with Web interfaces. This worked was performed for the Human Genome and the DOE Demand Activated Manufacturing Architecture (DAMA) projects.

Computing Specialist, Data Systems Research and Development Division, Martin Marietta Energy Systems.

Responsible for software development/engineering and system engineering for geographic and graphic data display for the ADANS project for Air Mobility Command and the Strategic Deployment System (STRADS) for the Military Traffic Management Command (MTMC). For the FAA, developed a prototype distributed network messaging system as part of the CONUS Data Access Tool (CONDAT), including an ETMS message parser and flight matching rulebase system; participated in a Congressionally mandated air space capacity study.

Technical Consultant, Sterling Federal Systems. Developed applications and systems supporting the SAC Warnings and Indications System (SACWARNS).

Intelligence System Software Analysis Officer, Strategic Communications Division, USAF. Responsible for design and implementation of Intelligence Data Handling System (IDHS) components migrated from a mainframe to Sun workstation platforms. Performed system administration duties. Part of team deriving performance requirements for the SAC Intelligence Network (SACINTNET).

Name: Chris J. Lindsley

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Application Development
Web Server Support
Systems Management
Office Applications

Education: B. S., Computer Science, Iowa State University, (1983)
M. B. A., Management, University of Tennessee, (1988)

Experience: Chris has experience in a variety of computing environments including MVS, VMS, Unix and PC operating systems (Mac and Windows). His most recent activities include configuring and customizing the Blue Angel MetaStar knowledge management software and administering several WWW information servers on Unix and Windows platforms. Chris has experience with the Microsoft IIS and Apache web server software, and with the Netscape and Oracle web server software. Chris has used the Perl, Java, Cold Fusion, Visual Basic Scripting, Visual Basic, C/C++, SAS and COBOL languages during his career.

Name: Yun Liu
Position: Postdoctoral Research Associate, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Email: liuy@ornl.gov

Research Interests: Optical injection, adaptive signal generation, dynamical behavior of semiconductor lasers.

Education: Ph.D., Electronic Engineering, Shizuoka University, Japan (1994)
M.S., Opto-electronic Engineering, Shizuola University, Japan (1991)
B.S., Mechanical Engineering, University of Science and Technology of China (1986)

Professional Experience:

2001- Present **Postdoctoral Research Associate**, Complex Systems Group, Computer Science and Mathematics Division, ORNL

1996-2001- **Research Scientist**, ATR Adaptive Communications Research Laboratories, Japan.

2000 **Visiting Scholar**, Photonics Research Lab, Department of Electrical Engineering, University of California at Los Angeles.

1994-1996 **Research Associate**, Graduate School of Electronics Sciences, Shizuoka University.

Professional Societies: Optical Society of America (OSA)
Japan Society of Applied Physics (JSAP)

Name: Andrew S. Loebl, Ph.D.
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology
Phone: (865)574-5966
E-mail: loeblas@ornl.gov

Education: Ph.D. Statistics and Demography, at the University of Missouri, Columbia, Missouri, 1973

Experience: Andrew S. Loebl is employed at Oak Ridge National Laboratory (ORNL) where he currently serves as a Manager and program development leader for the Computational Sciences and Engineering Division, Collaborative Technologies Group. During the period 1999-2001, Dr. Loebl served as a Manager and program development leader for the Computational Physics and Engineering Division. Dr. Loebl served in several positions for Lockheed Martin Energy Systems at the two other major DOE facilities in Oak Ridge, between 1992 and 1999. These prior assignments included program management responsibilities for several initiatives and as management consultant to several Vice Presidents of Energy Systems, which included special assignments related to site and facility operations, program development, technology transfer and re-industrialization.

Between 1973 and 1992, Dr. Loebl held positions of increasing responsibility as a Research Staff Member of Oak Ridge National Laboratory. This culminated with that of Director for the Data Systems Research and Development Program (which Loebl founded in 1985). These positions and the Director included responsibilities for data and model validation programs begun in both the Department of Energy and the Department of Defense by ORNL, beginning in 1978. This work focused on validation and verification of data and models spanning the Energy Department's energy data bases as well as energy, conservation and economic models. At the height of the energy crises of the 1970's and early 1980's, the seat of the Energy Department's Data and Model Validation Program resided in Oak Ridge under the leadership of Dr. Loebl.

Work for the Department of Defense began with data and model validation initiatives, expanding to introduction of computer based reliability centered maintenance initiatives for all 4 branches of the military (~1982). This work expanded to logistics systems development for all the transportation/logistics commands of the DOD (~1984); the modernization of the U.S. World Wide Military Command and Control

System with specific Oak Ridge support to the leadership of the AWIS and AFWIS programs (~1987); modeling and simulation for the JCS (~1989); command center modernization for the Pentagon and several Major Command headquarters around the world resulting in the DOD's adoption of several new standard systems for both strategic and tactical operations (~1991).

ORNL work initiated under this directorate resulted in development of many modern concepts of 4th generation computer and data base technology applied to military command, control, modeling, planning and operations. These developments focused on small computer and network configurations for mobile C2 concepts and systems, on-board training systems for the Navy, reliability-centered systems analysis for Army aviation, support to various aspects of the design and development of the Navy's Seawolf submarine, small computer system development of C4ISR concepts as early as the mid 1980's, and ORNL direct tactical and operational support to Desert Storm and other, similar DOD responsibilities.

By 1992 the combined direct responsibilities of this Directorate encompassed an annual responsibility of over 125 inter-agency agreements comprising a budget of over $150million and 200 separate projects.

Earlier in his career, Dr. Loebl served as a Director for the International Center for Applied Information Technology at the University of Tennessee, Knoxville, and on several research committees for the University. He has also served as a part-time Assistant Professor at the University of Tennessee, Graduate School of Planning. Prior to 1974, he was State Demographer for the State of Missouri; Director of the Missouri U.S. Department of Commerce Summary Tape Processing Center; Director of the Federal-State Cooperative Program for Population Estimation; Director for the Demographic and Statistical Unit, State of Missouri; Executive Director of the Southern Regional Demographic Group; and President of the Association of Public Data Users.

Dr. Loebl has published in the field of statistical demography, program management, information systems and data validation. Dr. Loebl served as an instructor and also as a research assistant at the University of Missouri, Columbia, Missouri.

Beginning October 1, 2001, Dr. Loebl joined the Collaborative Technologies Group, of the Computational Sciences and Engineering Division, Oak Ridge National Laboratory.

Name: Vickie E. Lynch

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation Group
Phone: (865)574-0623
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E-mail: lynchve@ornl.gov

Education: M.S., Applied Math, University of Tennessee, 1979
B.S., Mathematics, Union University, 1977

Experience: Vickie E. Lynch is a staff member of the Computational Science and Engineering Division, Oak Ridge National Laboratory (ORNL). She has been a member of the Fusion Energy Stability and Turbulence Group since 1979.

In 1979 she received a MS in Applied Math from The University of Tennessee where her thesis compared numerical schemes for solving system of damped second-order differential equations. She received a BS degree from Union University in Mathematics in 1977 and received the physics medal. Her presentation of her thesis won the student paper contest at the Southeastern SIAM Conference in 1979.

Developing parallel algorithms to do 3-D nonlinear turbulence calculations has been a part of her research since 1985. She developed microtasking fusion codes on the Cray-2 and Cray C90 and massively parallel algorithms for the iPSC-1, iPSC-2, iPSC/860, Delta,BBN, Paragons,SP1, SP2, and T3D. She also developed PVM distributed workstation computing for a fusion energy code. Presently she has parallel turbulence calculations running on the IBM SP and Cray T3E.

She has been involved in the development, modification, and data analysis of results of numerous codes including both 3-D turbulence codes and smaller calculations developed in C++. Present work is following tracer particles in a 3-D turbulence code and also a sandpile code, power grid calculations, and analysis of data from experiments and numerical calculations.

She was part of the physics design team for the Advanced Toroidal Facility experiment and has been involved in stellarator research since 1981. She developed AVAC to calculate vacuum magnetic field lines and has been involved in many stellarator equilibrium and stability

calculations. Present work is calculating the stability of pressure profiles with local zero-gradients.

Since 1999 she has mentored six undergraduate students: Mike Sacthjen, Karla Ferreira-Mejias, Serhan Altunata, Daniel High, Nathaniel Sizemore, and Chauncey Williams. Mike Sachtjen did research for 3 terms and received a young researcher grant to attend Dynamics Days 2000. Karla Ferreira-Mejias won the Luis Stokes Florida Georgia Alliance for Minority Participation 2000 Math award for her research. Nathaniel Sizemore's research will be presented in a paper at the Hawaii International Conference on System Science in 2002.

Name: G. (Kumar) Mahinthakumar

Position: Research and Development
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Key Skills: Numerical modeling of groundwater transport and remediation, Parallel, distributed, and grid computing applications, Inverse problems, and Human lung modeling.

Education: Ph.D., Civil Engineering, University of Illinois at Urbana-Champaign (1995)
M.S., Applied Mathematics, Claremont Graduate School (1990)
M.Eng., Environmental Engineering, Asian Institute of Technology, Thailand (1988)
B.Sc., Civil Engineering, University of Peradeniya, Sri Lanka (1985)

Professional Experience:

08/1994-Present: Research and Development Staff, Climate Dynamics Group, Computer Science and Mathematics Division. He has been working on high performance computing applications for groundwater contamination and remediation problems. He is also a member of the Partnership in Computational Sciences (PICS) groundwater grand challenge project team, developing the next generation parallel groundwater contaminant transport code. He has a special research interest in developing massively parallel solution algorithms for groundwater flow and transport problems. He has 7 publications in peer-reviewed journals and more than 9 conference papers with presentations.

07/1994-08/1990: Research Assistant, University of Illinois at Urbana-Champaign

07/1992-: Research Assistant, National Center for Supercomputing Applications

Professional Societies: American Geophysical Union
Society for Industrial and Applied Mathematicians (SIAM)
(SIAM) Activity Group on Supercomputing
Association for Computer Machinery

Name:	Muhammad Aziz Majidi
Position:	ASTRO (Advanced Short Term Research Opportunity) Participant
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Key Skills: Theoretical Condensed Matter Physics

Educational:

1999 – Present	Pursuing PhD in Physics at the University of Cincinnati, Cincinnati, Ohio
1997-1998	One year diploma program on Condensed Matter Physics, International Centre for Theoretical Physics (ICTP), Trieste, Italy
1997	MS in Physics, University of Indonesia, Jakarta, Indonesia
1993	BS in Physics, University of Indonesia, Jakarta, Indonesia

Name: Jay F. Manneschmidt

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Computer Programming:
Web Technologies
Database Management

Education: B.A. in Mathematics University of Tennessee (1978)
M.S. in Applied Mathematics, University of Tennessee (1982)
M.S. Thesis: 'Coupling the DOT-IV Two-Dimensional Discrete Ordinates Computer Code Through a 90-degree Rotation of Geometry,' ORNL/CSD TM183. Advisor: Dr. H.L.Dodds.

Experience: Jay Manneschmidt developed various computer codes and data management systems involving back-end SQL databases products. Current projects include:
1) The Atmospheric Radiation Measurement (ARM) project which offers a cgi driven web interface which allows atmospheric scientists to obtain various selections of data from a central HPSS archive of approximately 16 terabytes.
2) The Personnel Accountability Scanning System (PASS) which provides emergency evacuation accountability for approximately 500 residents and visitors of building 9212 from the Enriched Uranium Organization through the use of badge scanners.

Name: Stephen M. Margle

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Key Skills: Systems Management
Computer Hardware / Software Design
System Administration

Education: B.A., Math, St. Bernard College, Cullman AL (1965)
M.A., Math, The University Of Tennessee (1968)

Experience: Mr. Margle is a Systems Engineer in the Systems Engineering and Technology Group of the Computational Sciences & Engineering Division (CSE) at the Oak Ridge National Laboratory (ORNL).

Mr. Margle's current efforts as a Systems Specialist at the ORNL Distributed Active Archive Center (DAAC), include computer hardware and software design, specification, and implementation primarily using C, Perl, Java, HTML, XML, Sybase and UNIX resources in support of the DAAC's SGI WWW servers.

Mr. Margle's recent efforts include network management, system management, network administration, and system administration for an extensive network of Sun servers, Sun workstations and personal computers.

Mr. Margle's past efforts include system analysis and solution with software design (including hardware integration) on minicomputers, personal computers and workstations. Systems and programming projects have used C, assemblers, FORTRAN, networking tools, database management software and graphics/plotting packages.

Name: Garvin J. Morris

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Section: Systems Engineering and Technology Group
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Key Skills: Software Engineering

Education: High School, Harriman High School (1963)
Training Classes, Access programming, Oracle report writing, FoxPro, Active Server Pages, Cold Fusion programming and Crystal Reports

Experience: Mr. Morris has been with Oak Ridge National Laboratory for thirty-six years (twenty-eight in the computing area). He has worked on several projects, which included down sizing of the ETTP site, SNS applications, and several different Web site developments.

He has experience in many different programming areas, such as Access, FoxPro, Cold fusion, ORACLE and Active Server Pages. He has used this experience in stand-alone program development and Web applications. He has also used these skills to convert several applications that were not Web ready to bring them into a new environment. Mr. Morris has a unique ability to communicate technical jargon to his customers in a way that is easily understandable. This greatly facilitates the requirements and analysis phase of programming projects. He has received several internal awards and letters on his quality of work.

Name: Robert H. Morris

Position: Senior R&D Staff
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Group: Modeling and Simulation Group
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Education: M.S., Nuclear Engineering, University of Wisconsin, Madison WI
B.S., Mechanical Engineering, University of Hawaii, Honolulu, HI

Certifications: Professional Engineer Registration (Mechanical)

Professional Societies: American Society of Mechanical Engineers
American Nuclear Society
National Defense Industrial Association

Experience: Program Manager, Oak Ridge National Laboratory, Oak Ridge, TN.
Over 25 years of nuclear related experience, the last six of which have be as the program manager for a large defense related program dealing with characterization of the world's nuclear facilities. This program develops methodologies for predicting the response of various large facilities to attack by military or terrorist weapons and establishes vulnerability criteria for the different types of facilities. This is done through the use of computer codes to model and predict the probable damage state and can also provide an estimate of the releases from the facility. This project includes several other tasks for calculation and presentation of plant kill and core damage probabilities; source term characterization for various attack scenarios; code benchmark and validation and small scale testing. This program supports the Department of Defense, along with other contractors, in the development of an for ward-deployed computer code that calculates the atmospheric dispersion of radiological material as a result of accidents or incidents at any of the world nuclear facilities, which include commercial and research reactors, enrichment facilities, reprocessing facilities, etc.

Other business experience has included: providing technical and project management support services for a DOE program dealing with severe accident analysis for the advanced light water reactors; providing consulting services to the nuclear power generation industry in the areas of mechanical/nuclear and computer engineering; providing staff augmentation for a electrical utility during construction of a large two unit PWR; and acting as the nuclear/mechanical engineering site representative for the architect engineer for other nuclear reactor construction projects.

Name: John L. Mugler

Position: Research Assistant
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Key Skills: **Programming Languages**: C/C++, Java, PHP, Perl, Python, IBM/PC, ASM, HTML, Prolog, TCL/TK, Jaca, Script, Pascal, MPL-C, Soar;
Operating System: Unix, Linus, Windows, 9x/NT/2k, MS-DOS, DOS
RDBMS: Oracle, MySQL, MSAccess
Design Skills: OOA, OOD, UML, ERD, EERD
Miscellaneous: SQL, DDD/GDB debugger

Education: M.S., Computer Science, Middle Tennessee State University (2001)
B.S., Management, Western Kentucky University (1990)

Professional Experience:

2002-Present: Research Associate, Network and Cluster Computing Group, Computer Science and Mathematics Division. HPC Cluster research and cluster administration, projects: OSCAR, C3.

Summer 2001: Research Associate in the Computer Science and Mathematics Division at the Oak Ridge National Laboratory. He worked on the M3Cproject. He conceptualized a system for the control of a set of tools that controls clusters of computers using a GUI front-end.

1999-2001: Graduate Teaching Assistant, MTSU, Computer Science Department. He worked at the Help Desk with computer science students teaching them to raise their programming ability to a higher level. As a Computer Architecture Lab Instructor, he directed the construction of a simple computer using B^2 logic during lab time. As a Data Structure Program Grader, he graded and debugged C++ programs that used both hand-coded data structures and also items from the C++ standard container.

1994-1998: Operations Manager/Field Supervisor, Reimers Systems Inc. He designed, built, and installed custom equipment related to human life support in hazardous conditions. As a manager, he supervised shop personnel and a diverse range of people from dry-wallers to architects during equipment installation. He's learned that coordination and communication are the keys to a successful project.

Name: Cindy R. Myers

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Key Skills: Database Input and Management
Computer and Graphics Support

Education: Associate of Science in Computer Sciences
Roane State Community College (1979)

Experience: Cindy Myers is the Distributed Active Archive Center (DAAC) User Services Director for the Environmental Sciences Division. Responsibilities include coordinating and completing user requests for data. Other responsibilities included the transition of over 300 BOREAS data sets in which abstracts and definition files were compiled. Maintains a Tape Inventory using EXCEL to track 8mm data tapes that are loaded into mass store. Mercury User Administrator in which new users are assigned Ids for the Mercury System.

Ms. Myers is the Database Input and Management Coordinator for Offsite Waste Shipments and TSCA Incinerator Burn Plan using Access. She provided support for cost reports and document management, and maintained Record Management System as required by the State of Tennessee. She also provided graphics support for Waste Management Division, and computer support using DBASEIII, Harvard Graphics and LOTUS123 for Chemical Technology Division. These were used for database development for several projects and graphics for the annual Integrated Database Report.

Ms. Myers also worked as an EDP Technician for the X-10 Computer Center, and Transferred to the Computer Library in which computer manuals were maintained and mailed to users at all three plants.

Name: Thomas J. Naughton III

Position: Research Assistant
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Key Skills: Cluster Configuration & Management, Parallel Programming

Education:
M.S., Computer Science, Middle Tennessee State University (2000)
B.A., Philosophy, University of Tennessee - Martin (1998)
B.S., Computer Science, University of Tennessee - Martin (1998)

Professional Experience:

08/2001-Present	Research Associate, Network and Cluster Computing Group, Computer Science and Mathematics Division. HPC Cluster research and cluster administration, projects: OSCAR, C3.
05/2001-08/2001	Internship, Computer Science and Mathematics Division, Evaluate cluster environments and contribute to OSCAR & C3 projects
01/2001-05/2001	Temporary Professor, Department of Computer Science, Middle Tennessee State University. Teach introductory computer classes for MS-Windows and Office.
08/2000-12/2000	Graduate Assistant, Department of Computer Science, Middle Tennessee State University, TA undergraduate C++ programming classes.
08/1998-07/2000	Graduate Assistant, Department of Engineering Technology & Industrial Studies, Middle Tennessee State University. Instruction and administration for Mobile Manufacturing Learning Center (MMLC).
10/1993-07/1998	Student Assistant, Computer Center, University of Tennessee at Martin. Technical support and assistance for campus computer users (faculty/student).

Professional Societies: ACM, USENIX, Upsilon Pi Epsilon

Name: Tommy R. Nelson

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Database Design
Operating Systems

Education: B. S. Finance/Management Science, University of Tennessee (1983)
A. S. Computer Science, Roane State (1977)

Experience: Mr. Nelson is a Systems Engineer, Leader, Data Systems Design and Development in the Computational Sciences and Engineering Division. He also is a Matrixed - Task Leader for the Computing Systems Development, Carbon Dioxide Information Analysis Center (CDIAC) of the Environmental Sciences Division. Mr. Nelson is responsible for the design, development, implementation, and management of all major computing systems, and directing the activities of computing systems development staff.

Mr. Nelson also has extensive professional course work in the areas of database design, systems analysis, systems engineering, systems administration, operating systems, object-oriented programming, C programming, statistical analysis, parallel programming, networking, client-server computing, and program management.

Name: Don Nicholson

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory (ORNL)
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Key Skills: Dr. Don Nicholson is a senior research scientist in the Computational Physics and Engineering Division at ORNL. His research interests are the application of first principles electronic structure methods to alloys, amorphous metals, and complex magnetic materials. In particular he has contributed to the understanding of short-range order, electronic transport, and noncollinear magnetism in metals. He also has experience in density functional theory, multiple scattering theory, and parallel algorithms. He has authored over 75 papers in these areas.

Education:
1974 BA Mathematics and Physics, Cum laude, Vanderbilt University
1976 MS Physics University of Illinois (Urbana)
1982 Ph.D. Physics Brandeis University

Experience:
1986 - Present: Research Scientist, ORNL
1984-1986: Associate Professor, University of Tennessee-Knoxville
1982-1984: Postdoctoral fellow, Oak Ridge Associated Universities
1976-1978: Lead Carpenter, Berkeley, California
1974-1974: Mathematics teacher Goose Creek High School, Goose Creek, SC

Patents**:** Patent disclosure: 'Nanoelectronic Devices based on Multiple Energy Barrier Systems'

Name: Donald W. Noid

Position: Distinguished Senior Scientist
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
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Key Skills: Theoretical and Computational Chemistry

Education:

Iowa State University	B.S. Chemistry	Ames, Iowa	1971
University of Illinois	M.S. Chemistry	Champaign, IL	1973
University of Illinois	Ph.D.Chemistry	Champaign, IL	1976

(Major Professor: R. A. Marcus, Nobel Laureate)

Experience: Dr. Donald W. Noid received his Ph.D. in theoretical chemistry in 1976 from the University of Illinois under the guidance of Professor R. A. Marcus, Nobel Laureate. After a year as an NSF energy-related Postdoctoral Fellow working on picosecond laser experiments at the University of Illinois, he accepted a Eugene Wigner Fellowship and staff position at ORNL. In 1981, he became an adjunct Assistant Professor, and in 1990 a Professor, in the Chemistry Department at the University of Tennessee in Knoxville.

In 1983 he spent a one-year sabbatical in the Theoretical Chemistry Institute at the University of Wisconsin as the Theoretical Institute Fellow and Visiting Associate Professor. Dr. Noid was a visiting senior scientist at the Institute of Defense Analyses for a one-year period in 1985-1986. He has also served as a consultant to various organizations, including the Advanced Isotope Separation Group at K-25 and Physical Sciences Inc. During the period 1992-1994, he was involved in a technology transfer project involving computational polymer chemistry with the Hoechst Celanese Corporation. He joined the polymer group at ORNL in 1984 and has served on the editorial board of the journal *Macromolecular Theory and Simulation* since its inception.

Since 1972 Dr. Noid has been involved in studying nonlinear dynamics and chaos in a variety of applications. Noid was the first graduate student in chemistry to work in this field and has contributed several theoretical methods, as well as elucidated many ramifications of nonlinear and chaotic behavior in these studies. Projects worked on during this period have included infrared multi-photon dissociation of molecules, molecular spectroscopy, molecular collisions, atomic dynamics in strong magnetic

fields, nuclear dynamics of the gamma ray laser, and dynamical properties of polymers, properties of polymer nano-particles, polymer quantum drops and the study of nanotechnology for the development of a variety of nano-devices. Current research is focusing on the development of new methods for large-scale normal coordinate analysis of biological macromolecules. During the course of his research, Dr. Noid has authored or co-authored over two hundred and fifty publications and presented a similar number seminars and presentations in the U.S. and Europe. This work has been very highly cited and is listed among the top 2000 most cited chemist (out of over 600,000 chemist publishing) during the last 20 years. Another major emphasis currently involves applying neural network concepts to chemistry and polymer physics. In 1994, he was a co-organizer of the 1st DOE Workshop on Neural Network Application to Material Science.

Name: George Ostrouchov

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Key Skills: Statistics and Mathematics

Education: PhD, Statistics, Iowa State University (1984)
MSc, Statistics, Iowa State University (1981)
BM, Mathematics/Statistics, University of Waterloo (1978)

Professional Experience:

1983 – 2002 **Research Staff Member,** Computer Science and Mathematics Division, Oak Ridge National Laboratory.

Professional Societies: Member: American Statistical Association (Section on Statistical Computing, Section on Physical and Engineering Sciences)
Member: International Association for Statistical Computing,
Member: Society for Industrial and Applied Mathematics
Member: Mensa International
Associate Editor: Technometrics, since 1995
Associate Editor: Journal of Statistical Computation and Simulation, 1988–1994.
Organizer and Chair: Mini-symposium on Matrix Computations in Statistics at The Third SIAM Conference on Applied Linear Algebra, Madison, WI, 1988.
Organizer and Chair: Invited session on Dimension Reduction for Simulation Science Data, Joint Statistical

Name: Larry W. Owen

Position: Senior R&D Staff
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Group: Modeling and Simulation Group
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Key Skills: Plasma and fluid dynamics
Modeling and simulation of large scale experiments
System and subsystem optimization
Numerical solution of systems of ODEs and PDEs
Plasma-materials interactions
Industrial and space applications of plasmas
Nuclear and atomic reaction theory

Education: B.S., Virginia Polytechnic Institute and State University, Blacksburg, VA, 1964
Ph.D., Physics, University of Tennessee, Knoxville, 1970

Experience: 1961-1963 Co-op Student - Physics Div. ORNL.
1964,1965 Summer Research Participant - Electronuclear Div. - ORNL .
1964-1968 Part time consultant Electronuclear Div. – ORNL.
1970-1971 Post-Doctoral Research Associate University of Georgia, Athens GA. 1971-1972 Visiting Assistant Professor University of Georgia, Athens GA.
1972-present Present position.

Name: Sreekanth Pannala

Position: Research Staff Member
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Division: Computer Science and Mathematics
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Key Skills: Computational Fluid Dynamics and High Performance Parallel Computations

Education: Ph.D. in Aerospace Engineering, Georgia Institute of Technology, May 2000
M.S. in Aerospace Engineering, Georgia Institute of Technology, December 1994
B.Tech (Hons.) in Aerospace Engineering
Indian Institute of Technology, Kharagpur, India, August 1993

Experience: Graduate Research Assistant, Georgia Institute of Technology (September 1993 – March 1999)

Research was part of MURI (Army's Multi-Disciplinary University Research Initiative) in Intelligent Turbine Engines. Research accomplishments include development of realistic models for reacting two-phase flows in order to achieve more efficient and controllable spray combustion .
Developing parallel two-phase LES solvers with lagrangian droplet tracking using MPI.
Formulation of two-phase Linear-Eddy subgrid model
Large-Eddy Simulations of mixing layers with sprays
Simulation of Underwater Bubble Dynamics and Cavitation using ALE3D

Post Graduate/Doctoral Research Fellow, Computer Science and Mathematics Division, ORNL (March 1999 – June 2001)

Research Staff Member, Computer Science and Mathematics Division, ORNL (June 2001 – Present)

Parallelization and development of MFIX code – a widely used research code for fluidized beds in both chemical and fossil-energy industries. This effort included developing parallel modules for easy coding, implementation/validation and verification of the parallel code,

evaluation/implementation of better and efficient algorithms for high performance computing.
Thermal Radiation model for CHAD code - this research was in close collaboration with the USCAR companies (Ford, GM, Daimler-Chrysler), ADAPCO and Argonne National Lab to implement efficient and highly scalable parallel alogorithms for thermal radiation into CHAD code.
Control of Exhaust Gas Recirculation in Diesel engines
Reduced order models to predict fludized bed properties
Loosely coupled multiscale model for simulating carbon NanoTubes

Name: Lynne E. Parker

Position: Distinguished Research Staff Member, Complex Systems Group
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Division: Computer Science & Mathematics Division
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Research Interests: Distributed intelligent and robotic systems, system design, computer and robotic engineering, control architectures, artificial intelligence, cooperative systems, machine learning.

Education: Ph.D., Electrical Engineering and Computer Science, Massachusetts Institute of Technology (1994)
M.S., Computer Science, University of Tennessee (1988)
B.S., Computer Science, Tennessee Technological University (1983)

Professional Experience:

2001-Present Distinguished Research Staff Member, **Complex Systems Group, Computer Science and Mathematics Division, ORNL**
Research development of systems facilitating cooperation among heterogeneous distributed robots. Research issues include intelligent control, learning theory, pattern recognition, neural networks, intelligent decision-making, probabilistic reasoning, and computer vision.

1996-2001 **Group Leader**, Robotics and Intelligent Machines Group, Computer Science and Mathematics Division, ORNL

2000-2001 **Senior Research Staff II,** Robotics and Intelligent Machines Group, Computer Science and Mathematics Division, ORNL

1998-2000 **Senior Research Staff I,** Robotics and Intelligent Machines Group, Computer Science and Mathematics Division, ORNL

1996-1998 **Research Staff II,** Robotics and Intelligent Machines Group, Computer Science and Mathematics Division, ORNL

1994-1996	**Research Staff I,** Robotics and Intelligent Machines Group, Computer Science and Mathematics Division, ORNL
2001-Present	**Adjunct Professor,** Mechanical and Aerospace Engineering and Engineering Science Department, University of Tennessee-Knoxville.
1989-1994	**Research Assistant,** Artificial Intelligence Laboratory, Massachusetts Institute of Technology. Performed Research in situated agent cooperation, architectures for autonomous agents, learning in embedded systems, and multi-agent communication.
1990	**Research Staff,** Hughes Research Laboratory, Artificial Intelligence Center, Cambridge, MA. Researched and developed issues of local versus global control for cooperative agent teams.
1986-1989	**Research Associate,** Center for Engineering Science Advanced Research, Oak Ridge National Laboratory. Researched and developed artificial intelligence methodologies for job planning, dynamic task allocation, and automated monitoring for Human-Robot Symbiosis.
1983-1986	**Computing Analyst,** Computing and Telecommunications Division, Y-12 Plant, Martin Marietta Energy Systems. Designed, developed, and implemented user-friendly, interactive bar-coding and transaction data edit interfaces, and systems for tracking critical material movement and shipping.
Professional Societies:	Member, American Association for Artificial Intelligence
	Member, Association for Computing Machinery
	Member, IEEE Computer Society
	Member, Sigma Xi
	Member, Robotics Industry Association

Name: Susan D. Patty

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Key Skills: Software Engineering
Web Development/Programming
Data Analysis/Programming
Data Base Administration
System Administration

Education: B.A. in Computer Science, University of Tennessee at Knoxville (1980)

Experience: Susan Patty is a developer/analyst/data base administrator/system administrator in the Systems Engineering and Technology Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory. She has over 21 years experience developing specialized software applications for the Department of Energy (DOE) and other customers. She is the system administrator for the Systems Engineering and Technology Group's servers. She is the analyst/developer in Active Server Pages (ASP) for the National Transportation Program (NTP) Regulatory Analysis Center.

Ms. Patty was the system administration backup for the Department of Energy (DOE) Environment Management (EM) Web Servers. She was also the analyst/developer in Active Server Pages (ASP) for the Spallation Neutron Source (SNS) Configuration Management System and the Advanced Information Management System (AIMS) for the Waste Services Operating Group. She was an analyst/developer in INFORMIX/C++/UNIX/Visual FOXPRO for the Objective Supply Capability Adaptive Redesign (OSCAR) project for the National Guard Bureau, and the database administrator in VAX Rdb/VMS for the X10 Waste Tracking System (WTS). Ms. Patty has developed applications utilizing C++, Active Server Pages (ASP), VBScript,

JavaScript, HTML, MS Access, VAX/VMS, VAX Rdb/VMS, SQL, FOXPRO, COBOL, and FORTRAN. She has a working knowledge of MS Site Server, MS FrontPage, SQLPLUS (ORACLE), SQL (Rdb), MS Windows, UNIX, EXCEL, MS Word, DOS, and dBASE, and training in Solaris 8 System Administration, C++, Visual Basic, Facilitation, Project Management, and Basic Instructor Training.

Name: Anh-Vu Phan

Position: Postdoctoral Research Associate
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics
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Key Skills: Computational mechanics, fracture mechanics, boundary element methods

Education: Ph.D., Mechanical Engineering, University of Montreal (Canada), 1997
M.S. equivalent, Solid Mechanics, Institut National Polytechnique de Grenoble (France), 1993
B.E., Mechanical Engineering, Ho Chi Minh City University of Technology (Vietnam), 1982

Experience: Anh-Vu Phan received his Bachelor's Degree with distinction in Mechanical Engineering in 1982. Following graduation, he joined the faculty of the Department of Mechanical as an assistant lecturer and was promoted lecturer in 1984. After receiving his M.S. degree, Anh-Vu was appointed Associate Chair in charge of academic affairs. Following his Ph.D. graduation, he stayed on as a Postdoc in a manufacturing research group. Since May 1999, Anh-Vu has been offered a postdoctoral appointment in the ORNL's Computer Science and Mathematics Division.

Anh-Vu's work at ORNL has been in the area of computational fracture mechanics and nanostructures. He has been involved in developing the symmetric-Galerkin boundary element method for both 2-D and 3-D elasticity and Stokes flow. The highlight of this work has been the development of a new quarter-point element enabling highly accurate crack tip analysis in both traditional fracture mechanics as well as frictional contact fracture mechanics, and the successful coupling of the boundary element methods with level set methods in modeling the growth in nanostructures. Anh-Vu currently serves as reviewer for journal Engineering Fracture Mechanics, for Air Force Office of Scientific Research. He is also member of the International Society of Structural and Multidisciplinary Optimization, the United States Association for Computational Mechanics, and the International Association for Computational Mechanics. He has coauthored over 30 journal and conference papers. Anh-Vu just has been offered a research staff position in the Computational Sciences and Engineering Division. His new appointment will begin as of February 1, 2002

Name: Mary H. Phillips

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Software Engineering

Education: Associate Degree, Business, Clinch Valley College (1962)

Experience: Mrs. Phillips is a Software Engineer in the Systems Engineering and Technology Group of the Computational Sciences and Engineering Division at the Oak Ridge National Laboratory (ORNL). She has 23 years of professional experience in working with Federal Agencies, with 17 years of experience in supporting the Department of Energy (DOE) through program, project, and information system support. She managed a team of six persons that were responsible for the design and development of the DOE Environmental Management web site (EMWeb), which contains over 36,000 web pages and receives nearly 2,000,000 hits per month. She maintained the quality assurance standards for this team, along with enforcing the standards. Mrs. Phillips co-wrote the "EMWeb Style Guide" which is used as a point of reference by various contractors involved in adding information to this system. She provided daily support and maintenance to customers wishing to add their information to the web site, along with improving and maintaining information and creation of new web sites within the system. She participated in a major overhaul to bring the EM Web system into Federal compliance with Universal Accessibility standards.

Prior to her DOE EM work, Mrs. Phillips worked with various Department of Energy programs providing quality assurance and program support. She managed the Waste Information Network (WIN) User Support staff that provided assistance to approximately 1500 users across the country. Mrs. Phillips was involved in the development of databases that provided tracking of user activities and was responsible for the design and functionality of WIN’s bulletin boards.

Name: Thomas E. Potok, Ph.D.

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Education: Ph.D., Computer Engineering, North Carolina State University, July 1996, Development of a Quantitative Process Model for Object-Oriented Software Development under the direction of Dr. Mladen Vouk, Professor of Computer Science.
M.S., Computer Engineering, North Carolina State University, 1991, focus on software engineering and risk management. Key classes: Software Engineering, Software Risk Management, Object-oriented languages and systems, Telecommunications, and Artificial intelligence.
B.S., Computer Science, North Carolina State University, 1984.

Experience: Oak Ridge National Laboratory/University of Tennessee Collaborative Technologies Group Leader September 2001 - Present
Co-principal investigator for the DOE funded Scientific Data Management Center a multi-lab, multi-university project to improve scientific discovery through improved management and analysis of massive scientific data.

Principal investigator in the development of the Virtual Information Process Agent Research (VIPAR) project for the US Pacific Command.

Principal investigator in the development of an autonomous intelligent multi-agent system for aircraft spare part grouping.

Co-principal investigator for the Manufacturing Agent-Based Emulation System (MABES) project funded by Lockheed Martin Tactical Aircraft Systems where MABES has been successfully deployed.

Principle investigator on the Collaborative Management Environment (CME) project, a DOE sponsored project to manage multi-lab research funding. Successfully developed a CME pilot in collaboration with three other national laboratories. This pilot brings together a variety of technologies, ranging from federated databases, to semantic modeling, to ontology development.

Adjunct Faculty Member - Computer Science Developed and Teach Special Topics in Software Engineering, and teach Personal Software Process graduate courses at the University of Tennessee.

IBM's Software Solutions Laboratory, Research Triangle Park, North Carolina. Software Engineering. Held a variety of software engineering positions ranging from object-oriented consultant to architectural team leader.

Name: Line Pouchard

Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Telephone: (865) 574-6125
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Key Skills: Agent-oriented architectures, including agent roles and languages. ontology engineering, object-oriented modeling, programming languages: Java, Perl, SQL, XML (basic level).

Education: MS, Information Sciences, Systems Analysis Concentration, School of Information Sciences, University of Tennessee (1998)
PhD, Comparative Literature, Graduate Center, University of New York City (1993)

Professional Experience:

2001- 2002 **Research Associate.** Oak Ridge National Laboratory. Computer Science and Mathematics**.** Perform state-of-the-art research in the area of agent-oriented systems and ontology development.

1999 - 2001 **Post-doctoral Research Scientist.** Oak Ridge Associated Universities, located at Oak Ridge National Laboratory. Computer Science and Mathematics. Collaborative Technologies Group. Perform state-of-the-art research in the area of collaborative technologies, in particular agent-oriented architectures and agent communication languages, collaboratory research, and ontology development.

1998 - 1999 **Research Associate.** University of Tennessee, Knoxville. Imaging, Robotics, and Intelligent Systems Laboratory**.** Contributed research related to proposal development in computer vision and knowledge management.

1996-1998 **Graduate Assistant.** University of Tennessee, Knoxville Department of Computer Science and School of Information Sciences. Published papers in refereed and other publications. Analyzed query logs, designed classification systems, and performed searches. Developed and maintained Web services, managed technical report collections, and provided information services.

Name: Vladimir Protopopescu

Position: Distinguished Research Staff Member, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Development of basic research programs in emerging science and technology areas such as: complexity, emergence of physical properties in systems with multiple time and length scales, nonlinear dynamical systems and chaos, quantum information science and technology, global optimization, and inverse problems with applications to reverse engineering at the nanoscale. Support DOE leadership team in formulation of such programs, their implementation (interaction with national labs and universities), and assessment of their impact.

Education: Ph.D., Mathematical Physics, Institute of Atomic Physics, Bucharest, Romania, 1976
M.S., Theoretical Physics, Univ. of Bucharest, Bucharest, Romania, 1968

Professional Experience:

01/1991-Present **Senior Research Staff and Project Manager**, Complex Systems Group, Computer Science & Mathematics Division, ORNL

1985- 1990 **Research Staff and Project Manager**, ORNL

1983-1984 **Research Associate and Project Leader**, Chemistry Department, Boston University, Boston, MA

1982-1993 **Research Associate**, Chemistry Department, Yale University, New Haven CT

1979-1982 **Senior Research Staff**, Mathematical Physics Department, Institute for Physics and Nuclear Engineering, Bucharest, Romania

1972-1979 **Project Leader**, Mathematical Physics Department, Institute for Physics and Nuclear Engineering, Bucharest, Romania.

1968-1972 **Research Staff**, Theoretical Physics Department, Institute of Atomic Physics, Bucharest, Romania.

Professional Societies:
Member, American Mathematical Society
Member, International Association of the Mathematical Physicists
Member, Society for Industrial and Applied Mathematics
Member, American Physical Society

Name: Nageswara S. Rao

Position: Distinguished Research Staff Member, Complex Systems Group
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Division: Computer Science & Mathematics Division
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Research Interests: Computer Networking, Sensor and Information Fusion, Cyber Security, Statistical Estimation, Robot Exploration and Mapping.

Education: Ph. D., Computer Science, Louisiana State University (1988)
M. E., Computer Science & Automation, Indian Inst. of Science (1984)

Professional Experience:

07/2001-Present	**Distinguished R&D Staff**, Complex Systems Group, Computer Science and Mathematics Division, ORL
1998-2001	**Senior Research Staff Member**, Intelligent and Emerging Computational Systems Section, Computer Science and Mathematics Division, ORNL
1996-1998	**Research Staff Member II**, Intelligent and Emerging Computational Systems Section, Computer Science and Mathematics Division, ORNL.
1993-1996	**Research Staff Member I**, Intelligent Systems Section, Engineering Physics and Mathematics Division, ONL
1988-1993	**Assistant Professor**, Computer Science Department, Old Dominion University.
1985-1988	**Research Assistant**, Department of Computer Science, Louisiana State University.
1984-1985	**Research Assistant**, School of Automation, Indian Institute of Science

Professional Societies: Senior Member, IEEE and Member, ACM

Name: Kevin A. Rasch

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
Phone: (865) 574-5434
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Key Skills: Military Logistics Systems Analysis/Development
Integration of Heterogeneous Data Systems
Database Systems Analysis/Development
Web-based Systems Analysis/Development
Client/Server Systems Analysis/Development
Relational Database Management Systems Administration
Unix Systems Administration

Education: M.S. in Computer Science concentrating in Database Systems, Stanford University (1993)
B.A. in Computer Science/Business Administration, Rhodes College (1988)

Experience: Kevin A. Rasch is the Team Leader of the Advanced Computing Solutions Team in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory. He has worked on a variety of projects that utilize his skills in the analysis, design, and development of database systems. Mr. Rasch is currently the Principal Investigator for the highly successful OSCAR project. Developed for the National Guard Bureau (NGB) Logistics Division, OSCAR provides an automated interface between computer systems at the NGB and 54 U.S. states and territories. It streamlines movement of high-end equipment and processes over $2 billion in equipment annually. It includes a module known as STAR that has provided savings of over $14 million to NGB in the first 15 months of operation. Kevin's work on this project earned him a letter of commendation and a National Guard Bureau Minute Man Award, an honor rarely conferred upon civilians outside of the NGB command structure. Mr. Rasch has also managed the technical aspects of a database system for the NGB that resulted in a payoff of over $80 million per year in cost avoidance. He is a member of the Phi Beta Kappa international honor society.

Name: Pamela M. Ratledge

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Computer Programming

Education: B.S., Physics major, minor in Mathematics, Eastern Illinois University (1980)

Experience: Pamela M. Ratledge is a Research Staff Member in the Systems Engineering and Technology Group of the Computational Sciences and Engineering Division (CSED), at Oak Ridge National Laboratory (ORNL). She has worked on a variety of projects that utilize her skills in problem analysis and computer programming. In recent years, Ms. Ratledge has worked with various teams to design and develop methodologies for various database systems. She has programmed and implemented applications in ORACLE Forms and Reports for the Comprehensive Tracking System (CTS). In addition, she has programmed and implemented applications in VISUAL FOXPRO and SEAGATES CRYSTAL REPORTS for the classified version of this same system (CTS). Her responsibilities for this project have dealt mainly with reporting.

Also in recent years, Ms. Ratledge has developed and implemented on the web the Recertification Test for Transportation, which is used by numerous external DOE sites. She utilized her skills with Active Server Pages (ASP), Visual Basic Script, JavaScript, and HTML. With these same skills, Ms. Ratledge rescued and implemented the SNS Configuration and Management System. She saved this project when the Lead Developer left unexpectedly on medical leave. Ms. Ratledge quickly ramped up on a very complex system and successfully led the four-person development team.

Ms. Ratledge has programmed and implemented in FOXPRO the results of risk assessment as part of the Programmatic Environmental Impact Statement. Utilizing Structured Query Language (SQL) and Rdb Relational Database Management System, Ms. Ratledge contributed to the implementation of the Waste Tracking Project. This project earned Ms. Ratledge an Award of Excellence. Other computing experience has

led to the development of plasma model and beam dynamics of liquid metal ion source, development and validation of negative ion extraction code, and modeling experience with low energy beam transport and electrostatic quadripole systems. Ms. Ratledge has been at ORNL since 1980 and is the author or co-author of numerous publications, including journal articles, conference proceedings, and technical reports.

Name: Joel W. Reed

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology
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Education: M.S., Computer Science, University of Tennessee, Knoxville, 1995
Thesis: Markov Network Modeling and Recognition of Closed Contours
B.S., Computer Science, University of Tennessee, Knoxville, 1993
AVS/Express Developer Training, 1995
MASPAR Programming, JICS, University of Tennessee, Knoxville, 1994

Key Skills: Java, C, C++, Perl, Tcl, Tk, Microsoft Windows, Unix, IBM PC, SUN, SGI, Java Swing, Open GL, UNIX Network, X11

Experience: Research Assistant at UT-Battelle, LLC. Worked with Battelle Memorial Institute to improve VIPAR performance by an order of magnitude. Designed and implemented the mobile agent framework for the Virtual Information Processing Agent Research (VIPAR) system . Designed and implemented the dynamic clustering algorithm for the VIPAR system. Implemented the Manufacturing Agent-Based Emulation System (MABES) which was subsequently licensed and commercialized. Designed and implemented the user interface and data transport for the Financial Automated Management Environment (FAME) which evolved into a DOE corporate system. Designed and implemented a report specification language compiler for the Financial Automated Online User System (FAMOUS) project. Created a Virtual Reality Modeling Language (VRML) demonstration for Supercomputing 1995. Created an X windows application to do remote window display. Added distributed network capability to CVS version control software. Created a distributed CVS demonstration for Supercomputing 1994. Designed and implemented a graphical user interface for distributed CVS. Developed visualization modules for AVS/Express. Implemented user interfaces for the Collaborative Management Environment (CME).

Lewis, King, Krieg & Waldrop, P.C., System Administrator. Installed and configured software and hardware. Responsible for supporting approximately 80 network users.

Philips Consumer Electronics Company. Installed Novell networks: hardware, cabling, software,. Installed and repaired IBM PC computers.

Trained personnel in the use of various software packages. Created graphic presentations for upper management. Developed an application in Dbase for the personnel department.

University of Tennessee, Knoxville. Tutored students in introductory computer science courses.

Name: Richard W. Reid

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Program Manager
Team Building
Information Systems Management

Education: B.S. in Industrial Management, the Ohio State University (1959)
MBA, Information Systems Slanted, Louisiana Tech University (1970)

Experience: Richard Reid is the Group Leader of the Systems Engineering and Technology Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory (ORNL). The group has 25 computer–oriented professionals focused on a wide range of computational efforts. The group's work ranges from very large Work-For-Others (WFO) projects ($45M Chem-Bio Support for the U.S. Army), Military Logistics Systems to large-scale scientific data management systems.

Specifically, Mr. Reid is a retired Air Force Officer that brought almost 30years of top-level military systems experience with him to ORNL. He has managed several large WFO programs and is currently the Software Program Manager for the Chemical Biological Mass Spectrometer system being developed for the U.S. Army. The system recently won the 2000 R&D 100 award.

He is very active in numerous business development activities to bring funding to ORNL, especially in the area of counter-terrorism.

Name: B. Timothy Rhyne

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Scientific Data Management
Extensible Markup Language (XML) and Applications
Personal Computer Hardware and Software
Relational Database Design
Bar Code Technology

Education: B.S. in Industrial Engineering, University of Tennessee at Knoxville (1979)

M.S. in Computer Science, University of Tennessee at Knoxville (1988)
Certification: Microsoft Certified Systems Engineer

Experience: Tim Rhyne serves as the Systems Engineer for the ORNL Distributed Active Archive Center (DAAC), a NASA-funded ecological data center operating out of Environmental Sciences Division. In this capacity, Tim directs the project activities of the DAAC's technical staff. He also serves as technical point-of-contact with NASA on numerous subjects, traveling to meetings and participating in frequent telecons.

Mr. Rhyne is also one of two primary designers and is the development lead for Mercury, a Web-based metadata search and data retrieval system for distributed data that relies heavily on XML. Mercury supports numerous projects, including ones for NASA, DOE, EPA, and USGS; providing access to data in numerous countries around the world. The Mercury team has won a cash prize and a Certificate of Recognition from NASA.

In his career, Mr. Rhyne has been in line management, directing the former Microcomputer Applications Group for eight years. He has also worked in relational database design with the Data Modeling group at Y-12. He has been involved with bar coding since 1982 and developed a bar code waste tracking system using portable readers for the ORNL Waste Management Division.

Name: Irene F. Robbins

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Email: robbinsif@ornl.gov

Key Skills: Team Leadership
Scientific Computer Programming
Data Base Design and Administration
Program Management
Software Testing

Education: B.S. in Computer Science, Cum Laude, University of Tennessee at Knoxville (1986)

Experience: Irene Robbins is the development team leader of the Computational Sciences and Engineering Division's efforts on the Chemical and Biological Mass Spectrometer (CBMS II)) Block II program at Oak Ridge National Laboratory. In this capacity, Ms. Robbins oversees development of the high-level controller software for the CBMS II. This includes overseeing complex requirements specification and design, schedule management, and software testing. Ms. Robbins is responsible for the implementation of mathematical routines such as mass calibration, peak integration, and detection/ identification algorithms. This project has been recognized with an R&D 100 award for 2000, as well as a 2000 Technical Achievement Award from UT-Battelle.

Ms. Robbins served as the program manager for the Air Mobility Command Deployment and Analysis System (ADANS) for five years. In this capacity, Ms. Robbins was responsible for the $4M/year project budget, and scheduling of tasks and deliverables. The ADANS project received numerous awards, including a 1992 Lockheed Martin Technical Achievement Award, and a 1992 Association of American Geographers Applied Geography Citation Award.

Ms. Robbins has varied experience including C++, C, Fortran, Pascal, SQL, database design and administration, and limited Unix system administration. She is most familiar with the Unix (Sun Solaris) and Windows (95/NT/2000) platforms. Her publications include software user manuals, interface design/control documents, database studies, software quality assurance plans, and functional descriptions.

Name: James A. Rome

Position: Senior Scientist
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
Phone: (865) 574-1306
Email: romeja@ornl.gov

Key Skills: Computer security, air traffic analysis and optimization, plasma physics, scientific visualization, collaborative technologies

Education: Sc.D., Electrical Engineering, Massachusetts Institute of Technology (1971)
M.S., Electrical Engineering, Massachusetts Institute of Technology (1967)
B.S., Electrical Engineering, Massachusetts Institute of Technology (1964)

Professional Experience:

James A. Rome is a Senior Staff Member, Network and Cluster Computing Group, Computer Science and Mathematics Division. He spent 25 years doing theoretical Plasma Physics and is a Fellow of the American Physical Society. He has been Editor of the international newsletter "Stellarator News" since its inception 13 years ago.

Since 1990, Dr. Rome has been involved with air traffic modeling. He studied a month's worth of data to try and determine the capacity of the airspace in 1991. He collaborated with Northwest Airlines and modeled the economic impact of allowing the airline to reorder arrival queues at major hubs. Dr. Rome is implemented computer security for a Department of Energy project that allows electron microscopes and beamlines to be operated remotely across the Internet. Recently he has been examining how to increase the capacity of the airspace by using computers to create 4-dimensional non-conflicting routes.

He is currently simulating the DOE Energy Sciences computer network. He is an expert in the visualization of scientific data and is co-founder and President of Scientific Endeavors Corp., producer of the GraphiC Scientific Graphics Library.

Professional Societies: Dr. Rome is a fellow of the American Physical Society. He is a Member of the IEEE, ACM, Tau Beta Pi, Eta Kappa Nu, and Sigma Xi.

Name: Teresa A. Rose

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology
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Education: B.S., Mechanical Engineering, University of Tennessee, Knoxville, Tennessee with honors.
Graduate work, Engineering Science and Mechanics, the University of Tennessee, Knoxville, Tennessee.

Experience: Research Staff Member, Oak Ridge National, 3/80 to present.
Design Engineer, General Electric Company, Louisville, Kentucky, 6/78 to 3/80.
Established $5 million project with the Federal Aviation Administration. Lead the technical team as the project manager for two major efforts for the FAA: (1) the National Airspace Systems Capacity Study and (2) Support to the Operational Flow Traffic Planning (OTFP) Program. Energy Systems was part of a Federal Aviation Administration Congressional Task Team assembled to answer questions about the management of the National Airspace posed by Congress. The Capacity Study involved developing tools and methodologies to assess the performance of the air traffic management system. Extensive data handling and processing techniques were required to manage the large volume of operational data collected by the FAA. The results of the initial study were presented to Congress, and the project received additional funding. The Energy Systems' Team was selected for a Martin Marietta Energy Systems Inc, Operational and Support Team Award for 1992.

Through business development efforts, established a second major task at the FAA to develop a central database to provide consistent, reliable aviation data to simulation models and other decision support tools being developed for deployment in the Air Traffic Control System Command Center. The system operated real-time for more than two years in the Command Center.

Project manager for the Economic and Engineering Assessment of Advanced Technologies project. The project had two primary components: implementation of Total Quality Management concepts at Naval facilities and the analysis of new technology thrust areas for possible application at Naval depots. Received Martin Marietta's President's Award for Performance Improvement for work associated with this project.

Name: Nagiza F. Samatova

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
Phone: (865) 241-4351
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Email: samatovan@ornl.gov

Key Skills: Conduct basic and applied research in the area of distributed and dynamic petascale data analysis and high performance parallel and distributed computing. Lead research and development projects. Develop new research programs.

Education: Ph.D., Mathematics, Computing Center of Russian Academy of Sciences (CCAS), Moscow, Russia (1993)
MS, Computer Science, University of Tennessee, Knoxville, USA (1998)
BS and MS, Applied Mathematics, Tashkent State University, Uzbekistan (1991)

Experience: Dr. Nagiza Samatova is a Research Scientist in Computer Science and Mathematics Division of Oak Ridge National Laboratory. In 1993, she joined the Tashkent State University, Uzbekistan, as an Assistant Professor in the Department of Applied Mathematics and Mechanics, where she headed the discrete mathematics group, and became an Associate Professor in 1995. From 1998 till 1999 Dr. Samatova was a Research Associate at the Joint Institute for Computational Science, University of Tennessee, Knoxville. Samatova's responsibilities included research and development efforts in high performance scalable cluster computing applications. In 1999, Dr. Samatova has joined the ORNL as a postdoctoral research scientist in the Computer Science and Mathematics Division. She became a research staff member in 2001.

Professional Societies: Dr. Samatova is a member of ACM and IEEE Computer. She serves on the editorial board of the ACM Computing Reviews journal. She has been holding international scientific program committee appointments for the SIAM international conferences on Data Mining.

Name: Robert L. Sanders

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Modeling and Simulation
Phone: (865)576-7608
E-mail: sandersrl@ornl.gov

Education: M.S., Nuclear Engineering, University of Tennessee, 1986
B.S., Nuclear Engineering, University of Tennessee, 1985

Experience: Facility Hazard Analysis, BWR Severe Accident Technology(ORNL), Tennessee Valley Authority Division of Nuclear Engineering, Knoxville, TN, Sequoyah Nuclear Plant, Soddy-Daisy, TN

Mr. Sanders is currently involved with studying the vulnerability of various facilities (nuclear as well as chem./bio) to blast damage from military or terrorist weapons as part of a project for the Defense Special Weapons Agency. As part of this work, he has developed a Graphical User Interface (GUI) to provide fast and easy access to the facility vulnerability database developed through the use of EVA-3D calculations. This interface, designated as VISAC (VIsual reactor Site ACcident interface), is a tool that allows an analyst access to several thousand plant damage calculations performed with the EVA code via a simple and easy-to-follow set of plant images. This provides the user with a convenient, cost effective way to investigate the consequences of explosive blasts within a facility. The software originally written in TCL/TK is currently being rewritten in JAVA. In collaboration with the VISAC endeavor, he is overseeing the development of a variant for use with other agencies in support of the National Security Program Office. At the start of his career at ORNL, Mr. Sanders assumed the position of staff engineer with the responsibility of modifying MELCOR to meet the requirements of a fast-running PRA tool used for the analysis of nuclear accidents specifically for the GE Simplified Boiling Water Reactor (SBWR). His major contributions to MELCOR have been the inclusion of a new model that simulates the effects of the isolation condenser (IC) and passive containment cooling (PCCS) systems and the development and testing of a SBWR input deck. Former Employment and Education:

Robert Sanders received his bachelor's degree in nuclear engineering from the University of Tennessee in 1985. He was awarded the degree of Master of Science in the fall of 1986, after working with the Tennessee Valley Authority (TVA) for 18 months while developing a new

application for the complex Monte-Carlo Shielding code MORSE with albedo extensions provided in the BREESE-II package. After graduation, Mr. Sanders joined TVA as a nuclear engineer. His responsibilities included the maintenance and upgrade of two large computer codes used to develop source terms created either by design basis accidents or by normal operations and utilization of the calculated fission product inventory to calculate both the resulting offsite doses and the radiation environment within the plant for resolution of environmental qualification (EQ) issues. After being transferred to Sequoyah Nuclear Plant (SQNP), his job responsibilities changed from part-time code maintenance to a position of full-time plant support. The task of plant support included performing calculations for EQ, radiation monitor calibration curves, as well as changes to Technical Specifications and the FSAR, which included writing USQDs. This required a very strong working knowledge of plant operation, which was acquired through an extensive two-week plant operation course given at the SQNP Training Center. Shortly after receiving a transfer from SQNP to Knoxville, Mr. Sanders accepted a position at Oak Ridge National Laboratory (ORNL).

Name: Gorti B. Sarma

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Key Skills: Computational mechanics and computational modeling of the thermomechanical processing of metals

Education: Ph.D., Mechanical Engineering, Cornell University, Ithaca, 1995
M.S., Mechanical Engineering, Cornell University, Ithaca, 1993
B.Tech., Mechanical Engineering, Indian Institute of Tech, Madras, 1990

Experience

1998 – Research Staff Member, Computer Science and Mathematics Division, ORNL. (1) Developed and implemented finite element models to simulate deformation of metal polycrystals at the mesoscale on massively parallel supercomputers (e.g. IBM SP); (2) Applied finite element models to study deformation of aluminum single crystals and polycrystals under various processing conditions; (3) Performed thermal and mechanical analyses of composite tubes used in recovery boilers by pulp and paper industry to determine stresses in tubes under various operating conditions.

1995 – 1998 Post-doctoral Research Associate, Metals and Ceramics Division, ORNL. (1) Implemented a large deformation finite element formulation, incorporating a crystal plasticity constitutive model for simulating deformation texture development in metals, on the Intel PARAGON parallel supercomputer using High Performance Fortran; (2) Conducted finite element simulations at the mesoscopic level to study the inhomogeneous deformations of grains through explicit discretization of metal polycrystals; (3) Developed an implicit integration scheme to predict the mechanical response and change in grain orientation of an elasto-viscoplastic material subjected to large plastic deformations.

Publications: Refereed journals: 14, Conference proceedings: 16, Technical reports: 6

Professional Societies: The Minerals, Metals and Materials Society
American Society of Mechanical Engineers

Name: Thomas C. Schulthess

Position: Research Staff Member
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Education: Swiss Federal Institute of Technology (ETH-Zürich), 1989, Physics
Swiss Federal Institute of Technology, Ph.D., 1994, Solid State Physics

Professional Positions

1999 - Present	Research Staff Member, Computer Science and Mathematics, ORNL
1996-1998	Postdoctoral Fellow, Metals and Ceramics, ORNL
1995-1996	Postdoctoral Fellow, Chemistry and Materials Science, Lawrence Livermore National Laboratory
1994-1995	Research Assistant, Laboratory for Solid State Physics, ETH-Zürich
1990-1993	Teaching Assistant, Institute for Applied Physics, ETH-Zürich

Professional Activities and Recent Relevant Services:

Program committee member for the conference on Magnetism and Magnetic Materials (2001)
Member: American Physical Society, Materials Research Society
Member of the planning committee of ETH-Zürich, 1993-1995
Chairman of the Assistant Association of ETH-Zürich, 1990-1992

Name: Denise D. Schmoyer

Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Facsimile: (865) 241-1965
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Key Skills: Environmental data management, statistical consulting, statistical experimental design, Oracle, SAS, Microsoft Access, SQL, HTML

Education: BS, Mathematics Education, Indiana University of Pennsylvania (1975)
MA, Statistics, The Pennsylvania State University (1978)

Professional Experience:

1986 – 2002 **Statistician**, Oak Ridge National Laboratory, Computer Science and Mathematics Division. Database Developer / Database Administrator for the Computational Biology Section of Life Sciences Division (1998-Present). Environmental Data Consultant to the Oak Ridge Environmental Information System (1997 - 1998). Electronic Data Coordinator for the Oak Ridge Sample Management Office (1996 - 1997). Information Management Coordinator for the Clinch River Environmental Restoration Program (1993 - 1996). Statistical Consultant to the Engineering Technology and Environmental Sciences Divisions (1991-1993). Data Analyst for EPA Direct/Delayed Response Project (1986-1990)

Name: Jack Schryver

Position: Research Staff Member, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Cognitive engineering, human-machine integration, machine learning and human-computer interaction techniques.

Education: Ph.D., Cognitive/Experimental Psychology, University of California-Irvine (1982)
B.A., Psychology, University of California-Los Angeles (1974)

Professional Experience:

1986-Present **Research Staff Member**, Complex Systems Group, Computer Science & Mathematics Division, Oak Ridge National Laboratory. Principal investigator and co-investigator on numerous scientific and technical projects; proposal preparation; presentation of scientific findings at professional conferences; authoring open-literature publications; project management; advising student interns.

1981-1986 **Project Manager and Research Director**, for Ship Analytics at the Computer-Aided Operations Research Facility, Kings Point, NY. Performed man-in-the-loop simulation research using full-mission shiphandling simulator.

1979 **Consultant**, to Technology Service Corporation, Santa Monica, CA. Performed literature reviews of research concerned with psychophysical factors in visual displays used in simulator flight training.

Professional Societies: Member, Association for Computing Machinery
Member, IEEE Systems, Man and Cybernetics Society
Member, Human Factors and Ergonomics Society
Member, International Behavioral Neuroscience Society
Member, Society for Computer Simulation

Name: Jens C. Schwidder

Position: Research Associate
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Key Skills: Parallel and scientific computation; Distributed computing; Cluster management software; Electronic notebook systems; Web and Java-based user interfaces; Modular software design; Software design and implementation); Programming in Java, C, C++, Perl and other languages

Education: Advanced European Master of Science, Parallel and Scientific Computation, University of Liverpool, England (January 2000)
Dipl.-Ing. (FH) for Computer Science, University of Applied Sciences and Business of Berlin (FHTW-Berlin), Germany (February 2000)

Professional Experience:

04/2000 - Present: Research Associate, Network and Cluster Computing Group, Computer Science and Mathematics Division. Responsible for design and implementation of version 2.0 of the electronic notebook system (Enote) that has been developed at ORNL. In version 2.0, the implementation is Java based and provides modularity, history keeping, and other new or improved features. Part of the Scientific Annotation Middle-ware (SAM) project that is developing a middle-ware layer that will provide common services for notebook systems and applications with special needs for data and meta-data management. The main of the work in the SAM project is currently on security issues, like client authentication and access control. Design and implementation of M3C, a web based cluster management tool that provides simple multi-user access to federated cluster systems.

12/1999-08/1999: Work on federated cluster management project at ORNL as part of the Master of Science course at the University of Liverpool.

12/1998-04/1997: Web master at the Department of Engineering Sciences at FHTW Berlin.

02/1998-10/1997: Development of virtual device drivers (VxDs) for Windows 95 as practical semester at FHTW Berlin.

Name: Stephen L. Scott

Position: Staff Research Scientist
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
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Key Skills: Parallel and Distributed Computing, Cluster Computing, High Performance Computing, Networking

Education: Ph.D., Computer Science, Kent State University (1996)
MS, Computer Science, Kent State University (1992)
BA, Business Administration, Thiel College (1984)

Professional Experience:

9/1998-Present	Staff Research Scientist, Computer Science and Mathematics Division, Network and Cluster Computing Group. ORNL PI on Scalable Software Systems SciDAC Distributed heterogeneous computing research. Member of the PVM (Parallel Virtual Machine) and HARNESS (Heterogeneous Adaptable Reconfigurable NEtworked SystemS) teams. PI on LDRD for Development of Software Enabling Technologies for Terascale Computing. Coordinate cluster-computing research. Member of the High Performance Computing Open Source Working Group - formed of cluster computing experts from DOE, NASA, NSF, and NSA.
9/1998-9/1996	Post Doctoral Researcher, Computer Science and Mathematics Division, Distributed Computing. Member of the PVM (Parallel Virtual Machine) and HARNESS (Heterogeneous Adaptable Reconfigurable NEtworked SystemS) teams.
Fall 1997	Adjunct Faculty - Instructor, Pellissippi State, Computer Science Technology Department. Instruction of core computer science courses.
5/1996-1/1990	Instructor & Teaching Assistant, Kent State University, Department of Mathematics and Computer Science. Instruction of core computer science courses at undergraduate and early graduate levels.

Professional Societies: IEEE Computer, IEEE TFCC, ACM

Name: Angela Kay Sexton

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Software Engineering and Acceptance Testing
Requirements Analysis and Database Design
Computer Programming
Database Management
Engineering Tools

Education: B.S. in Computer Science, University of Tennessee, Knoxville (1986)
M.S. in Software Engineering, East Tennessee State University (2000)

Experience: Angela Sexton is currently the lead Software Engineer and Systems Administrator for the Access Control System at the Oak Ridge National Laboratory (ORNL). She has participated in the installation and testing of the new software and server, as well as written new programs to handle interfacing to other information systems here at the Lab. She has 15 years of software analysis, design and implementation experience on a variety of projects here at ORNL. As technical lead of the Special Assignment Airlift Missions, she spent five years developing airlift planning and scheduling software for the Air Mobility Command. She also worked two years developing ORNL Distributed Active Archive Center (DAAC) software for NASA, which maintained and distributed large amounts of biogeochemical data. From June 1995 to October 2000, she was Program Manager and Software Engineer for the development of MAP, an information and maintenance scheduling system written for Bonneville Power Administration.

Ms. Sexton has also participated in other Infrastructure and Transportation Research efforts. She served as a member of the Infrastructure Assurance methodology team for JPO in Dahlgren, VA in 1998. The team developed plans for researching infrastructure dependencies across Transportation, Power, Telecommunications and Gas. In 2000, she participated in a study of the Defense Distribution Center (DDC) Supply Chain for the Defense Logistics Agency. During this study, she performed data and process analysis in order to recommend an improved logistics methodology during peacetime as well as wartime.

Name: William A. Shelton

Position: Senior Research Staff
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Education:

Ph.D.	University of Cincinnati	1989
M.S.	University of Cincinnati	1984
B.S.	University of Cincinnati	1983

Professional Employment, Other Positions Held, and Affiliations:

Senior Research Staff, Computational Materials Science Group, 2001-Present
Group Leader, Computational Condensed Matter Physics Group, 1992 - 2001
National Academy of Sciences/NRC Post Doctoral Fellow, 1990-1992
Research Assistant/Physics Department, University of Bristol, Bristol, UK, 1987-1988

Invention disclosures/Patents:

Invention disclosure entitled “Coulomb Buffer as a Method for Adjusting Band Offset and Alignment at Semiconductor/Insulator and Semiconductor/Semiconductor Interfaces”, ID 1037.

Professional Organizations:

American Physical Society (APS)
Society for Industrial and Applied Mathematics (SIAM)

Professional Organization Activities:

Referee for Physical Review B and Physical Review Letters
Referee for Journal of Applied Physics
Referee for Materials Research Society
Referee for SIAM Review
Proposal Referee for Department of Energy Office of Science:
Office of Advanced Scientific Computing Research, Mathematical, Information, and Computational Science
Office of Basic Energy Sciences, Materials Science
Proposal Referee for the Air Force Office of Scientific Research Directorate of Aerospace and Materials Science

Name: Paul C. Shipe

Position: R&D Staff
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Division: Computational Sciences and Engineering
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Key Skills: Oracle Database Administration, working with large databases in a distributed environment.
Unix System Administrator, and Windows NT System Administrator.
Extensive experience in Oracle Web Server Administration.
Web forms and reports.
PL/SQL Server Pages.
Transportation Logistics.

Education: M.S., Physics (1987), Memphis State University
B.S., Physics (1983), Memphis State University

Experience: Software Engineer, Oak Ridge National Laboratory, Oak Ridge, TN, June 1991 to Present.
Programmer/Analyst, Integrated Computer Systems, Oak Ridge, TN, March 1989 to June 1991.

Name: Srdan Simunovic

Position: Senior Research Staff
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Key Skills: Computational Modeling of Materials and Structures,
High Performance Computing (HPC)

Education: Bachelor of Science, University of Split, Croatia;
Master of Science, Carnegie Mellon University
Doctor of Philosophy, Carnegie Mellon University

Experience: Srdan is a Senior Research Staff at the Computational Materials Science Group. In his research he combines the expertise in computational modeling, materials science and high performance computing. Srdan is the Principal Investigator on several ongoing research projects in modeling of crashworthiness of lightweight materials and structures. The materials range from random carbon fiber composite materials to new complex phase steels. The principal objective of the research is to develop predictive models for materials under dynamic loads. This will reduce necessity for excessive prototyping, cut the cost and time from design to manufacture, and more importantly reduce the weight of the vehicles and make the vehicles more energy efficient.

Crash behavior in materials involves deformation and energy dissipation processes on multiple length scales. The integration of length scales from micro to macroscopic, requires enormous computational effort. Srdan has been active in high performance research at the ORNL in developing parallel computer programs and models for crashworthiness. Under his supervision, ORNL researchers have developed and worked on several full vehicle crash models and these models have been used in research organizations around the world. The vehicle-to-vehicle crash models are routinely used by HPC manufacturers and software vendors for benchmarking and system optimization. External collaborators and sponsors include the U.S. automotive manufacturers, material producers, industry consortia, and the U.S. government organizations. Srdan's modeling activities are closely tied to the experimental program. He has worked on development of new characterization methods and devices for crashworthiness characterization. He is involved in new initiatives for materials and process modeling, applied mathematics programs, and HPC.

Name: Andrea L. Sjoreen

Position: Senior R&D Staff
Laboratory: Oak Ridge National Laboratory
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Group: Modeling and Simulation Group
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Education: State University of New York at Stony Brook; one year of undergraduate and graduate computer science courses, 1976; M.S., geophysics (rock mechanics), 1975.

M.S., Geological Sciences, University of Illinois at Chicago Circle; M.S., 1973;
B.S., Geological Sciences, 1971.

Experience: Designing, implementing, and documenting RASCAL, INTERRAS, and HPAC, reactor-accident source term and radiological dose models; Modifying groundwater flow and transport models to run on parallel computers; Assisted programming a finite-element analysis of geologic folds.

Scientific and numerical analysis programming; Analysis and requirements specifications; Graphical User Interface design and implementation; System testing; Answering users' questions and solving users' problems. Software Used: Fortran, C, Visual Basic, and JAVA. Hardware Used: IBM PC, DEC Alpha workstation, and supercomputers (Kendall Square, Intel i860, and Intel Paragon).

Designing a field measurements database for samples taken after radiological accidents; Designed and implemented a dose factor database; Designed and implemented an oil and gas well database; implemented a state base-map drawing system.

Writing project work plans and monthly reports; Writing technical papers; Presenting papers at professional meetings; (Full list of publications available on request); Managing projects and personnel.

Oak Ridge National Laboratory; Analyst/Programmer, 1981 to 2000; Group Leader, 2000 to 2001.
Indiana State Geological Survey; Programmer/Analyst, 1978 to 1981
Office of Long Range Planning, State University of New York at Stony

Brook; Assistant for Institutional Research, 1976 to 1978
Department of Earth and Space Sciences, State University of New York at Stony Brook; Graduate Research Assistant, 1973 to 1975
Department of Geological Sciences, University of Illinois at Chicago Circle; Graduate Research Assistant, 1971 to 1973

Name: Andrei V. Smirnov

Position: Postdoctoral Research Associate
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Professional Employment

10/01 - Present: Postdoc, ORNL/Oak Ridge Associated Universities

06/98 - 09/01: Visiting Scholar, Materials Science and Engineering
University of Illinois, Urbana, IL

11/96 - 05/98: Visiting Scientist, Ames Laboratory (DOE)
Iowa State University, Ames, IA

09/94 - 07/96: Alexander von Humboldt Fellow
Technological University of Darmstadt, Germany

1987 - Present: Junior Research Scientist, Research Scientist, Russian Research Center ``Kurchatov Institute", Moscow, Russia (on-leave since 09/94)

Name: Deryl A. Steinert

Position: Computing Specialist
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Division: Computer Science and Mathematics Division
Group: Computer Systems and Operations
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Key Skills: Operating Systems: Unix, Cray, MacOS, MVS, Vax/VMS, PDP/10, Windows
Programming Languages: Fortran, C, DCE, Encina, SFS, Sammi, Java, Perl, Motif, UnifAce

Education: B.S. in Computer Science, Penn State University (1981)

Experience: Deryl Steinert has worked in Oak Ridge for over 20 years. During this time Mr. Steinert has provided computer programming and graphics support to the following projects;

AVLIS - Advanced Vapor Laser Isotope Separation

HSST/PST - Heavy Section Steel Technology Pressurized Thermal Shock Experiments

Mr. Steinert developed several computer programs to help capture and analyze data generated during the Pressurized Thermal Shock experiments conducted by the HSST program. These experiments involved many months of set up and preparation before the experiment could be run. The tests themselves would last only a few seconds to not more than several minutes. The programs that were written were critical in determining the results of the tests.

GCEP - Gas Centrifuge Enrichment Plant

AGC - Advanced Gas Centrifuge: Mr. Steinert worked with Bill Arthur, Associate AGC Technology Manager in the Separations Systems Division. His main responsibilities included writing and maintaining computer graphics codes on the classified Vax and IBM/195 computer systems.

OSIM - Open System Implementation: This project looked at incorporating open systems technologies into C&TD and MMES. These technologies included client/server, distributed computing and graphical user interfaces.

HPSS - High Performance Storage System: Mr. Steinert's main responsibilities for HPSS include development, testing and support of the Storage System Manager (SSM). The SSM includes the System Manager and Data Server, which are used to monitor and manage the HPSS system.

Awards: 1997 R&D 100 Award for High Performance Storage System
1995 Director's Award for Continuous Improvement - Computer Manual/EFORM Ordering System

Several Certificates of Appreciation for presentations made to the Management Information Systems

Name:	G. Malcolm Stocks
Position:	Corporate Fellow Group Leader
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Education:	University of Bradford, UK. - B.Tech. 1966 - Applied Physics University of Sheffield, UK. - Ph.D.1969 - Theoretical Physics
Professional Interests:	American Physical Society Member: TMS Metals-Minerals-Materials Chair: Committee on Alloy Phases, TMS (1997-2000) Member: NERSC Users Group (NUG) Executive Board (1999-Present) Editorial Board: The Int Journal of High Performance Computing Application (1994-2001) Coordinator: Computational Materials Science Network (CMSN) (1999-Present) Plasma Science Advanced Computing Institute – Program Advisory Committee (1999-Present) Board Member TMS (1997-2000)

Name: Dennis J. Strickler

Position: R&D Staff
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Experience: Computational interest and experience includes: multivariable optimization in physics and engineering design problems, most recently in the area of magnetic coil system design for stellarator fusion devices; the numerical solution of free-boundary and inverse problems, applied recently in the magnetohydrodynamic equilibrium modeling and poloidal field coil design for the National Spherical Tokamak Experiment (NSTX) at Princeton Plasma Physics Laboratory; development of a World-Wide Web interface for the Atmospheric Radiation Measurements (ARM) data archive; development of a Java-based client-server model for the remote access and control of scientific codes using Java Native Interface (JNI) and Remote Method Invocation (RMI) technologies.

Name: C. David Sulfredge

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
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Group: Modeling and Simulation Group
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Education: Ph.D. in Mechanical Engineering, University of Kentucky, 1993
M.S. in Mechanical Engineering, University of Kentucky, 1990
B.S. in Mechanical Engineering, University of Kentucky, 1989

Professional Interests: Phase change heat transfer processes
Single and two-phase flow with heat exchange
Thermodynamics of liquid-vapor and solid-liquid interfaces
Blast effects on components and structures
System reliability analysis

Experience: Development Staff Member, Oak Ridge National Laboratory (1993–Present)

Member of Thermal Hydraulic Design Group for the Advanced Neutron Source (ANS) reactor project. Developed a model for flow excursion transients and a loop stability analysis for natural circulation in the ANS.

Produced numerous thermal hydraulic safety analyses for irradiation experiments and equipment upgrades in the HFIR reactor at ORNL.

Performed heat transfer calculations related to decommissioning of the Molten Salt Reactor Experiment at ORNL.

Analyzed the vulnerability of nuclear facilities to military or terrorist weapons for the Defense Threat Reduction Agency. Developed detailed models for the facility kill probability, probability of an accompanying radiological accident, potential for radioactive releases, and expected facility downtime.

Helped plan and conduct experiments to measure the blast fragility of nuclear facility components and the radiological releases expected for various weapon types.

Professional Societies: Adjunct Professor, Department of Mathematics, University of Tennessee, Knoxville (1999)

Name: Michael S. Summers

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Group: Collaborative Technologies
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Education: M.S., Mathematics, Carnegie Mellon University, 1979
B.S., Engineering Science, State University of New York at Buffalo, 1978

Experience: Oak Ridge National Laboratory, 1994 - Present
Calspan Corporation, 981 - 1994
Westinghouse Corporation, 1980 - 1981
Carnegie Mellon University, 1978 - 1980
Calspan Corporation, Summer 1979

Mr. Summers' academic background spans all the phases of research and development work both technical and managerial. This background covers system design and development, as well as research into various applications of computer science, engineering, and mathematics. His managerial background includes marketing, project planning, requirements analysis, and project management. His background is unusually broad, involving multiple engineering disciplines, computer science, and graduate education in mathematics. Mr. Summers' combined technical breadth and leadership has been effectively applied on many DoD and DoT projects where multi-disciplinary skills were required. These projects include: Semi-Automated Understanding and Redevelopment of Scientific Programs; Distributed Problem Solving Environment (PSE) for the Analysis of Welding Microstucture based on a Web Services Approach; Automated Development of a Java Native Interface (JNI) to a Large Legacy System; Simulation and Modeling; Software Engineering; Human-Computer Interface Technology; Database and Knowledge Base Technology; Geographical Information Systems; Command, Control, Communications (C3) Systems; Data Fusion Technology; Application-Specific Software Development Environments; and Intelligent Transportation Systems.

Mr. Summers' technical management experience includes the positions of: Manager for the Dynamic Traffic Assignment System project at ORNL; Technical Director of the Ohio River Navigation Investment Model Project (ORNIM) at ORNL; Project manager for Calspan's role in the Nationwide IVHS Architecture Program; Project manager for the Joint Modeling and Simulation System (J-MASS) Enhanced Modeling Library effort; Industry co-chair for the J-MASS Data Management Users Group;

Proposal engineer for a research effort to investigate the capabilities of spatial database systems to support data fusion systems; Project engineer for the development of major subsystems of a Command, Control, Communications, and Intelligence (C3I) laboratory for the Spanish Ministry of Defense; and Deputy program manager for a four-year, $4-million, multi-disciplinary research program funded by Rome Laboratory.

Name: Bobby G. Sumpter

Position: Research Staff
Laboratory: Oak Ridge National Laboratory (ORNL)
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Key Skills: Chemical physics; computational simulations, modeling, and theory of soft matter; computer algorithm/method development

Education: Bachelor of Science, Professional Chemistry Major; Mathematics, Physics, Computer Science, and Geology Minors, Southwestern Oklahoma State University, 1983 (graduated with honors); Ph.D. Physical Chemistry, Oklahoma State University, 1986. Thesis Title: *Theoretical Investigations of Intramolecular Energy Transfer and Unimolecular Reactions in Polyatomic Molecules*

Experience: Bobby is the author or co-author on over 185 papers in refereed journals, 200 communications to scientific meetings, 6 invention disclosures, and 1 book. These publications are in his areas of interest which is: Nonlinear dynamics and quantum mechanics of large molecular systems; neural networks and machine learning; lasers and external interactions with molecular-based materials; solid, liquid and meso-phases of macromolecules; nano-scale science and technology; fluid dynamics; chemical sensors; wavelet theory; fuzzy logic; genetic algorithms; statistical analysis; light force dynamics; production and analysis of polymeric nano-particles; production and theory of quantum drops; normal mode analysis of large molecular based systems; quantum chemistry; molecular neuroscience and neuropharmacology. Bobby was part of a research team that received the ORNL-CASD Technical Achievement Award in 1996 and another team that received the Lockheed Martin Energy Research significant advent award in 1999. He is a member of the American Association for the Advancement of Science, American Chemical Society, American Physical Society, American Institute of Chemists, International Neural Network Society, Sigma XI (Cornell Chapter), and the Materials Research Society. Bobby serves on Advisory Committee Member on the *International Journal of Smart Engineering System Design*, Gordon and Breach Publisher, Inc. (1996-2002), on a referee review panel for: *Journal of Physical Chemistry* and the *Journal of Chemical Physics*, was a Co-organizer (organization committee) of the annual international meeting, *Artificial Neural Networks in Engineering* (1995-2002), Co-organized and Chaired the *1st DOE Workshop on*

Applications of Neural Networks in Materials Science (February 28-March 2, 1994), Conference chairman for a section at the international meeting, *Artificial Neural Networks in Engineering, ANNIE94* and Co-organizer of the ACS regional Meeting SERMACS-99 (1999), *Computational and Theoretical Nanotechnolgy and Polymer Science*.

Name: Michael John Taylor

Position: R&D Staff
Laboratory: Oak Ridge National Laboratory
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Group: Modeling and Simulation Group
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Education: B.S., Mechanical Engineering, University of South Carolina, December 1974
M.S., Mechanical Engineering, University of Tennessee, June 1986
Post-graduate studies in finite-element computational mechanics and fluid mechanics, advanced natural convection heat transfer, analytical mechanics, and solution thermodynamics

Experience: Michael Taylor joined UT-Battelle in 1975 and has held Development Staff positions at the Oak Ridge National Laboratory (ORNL) and the Oak Ridge Gaseous Diffusion Plant. He is currently a staff member within the Computational Sciences and Engineering Division (CSE) with technical and program-development responsibilities.

Mr. Taylor's cumulative work experience is numerical problem solving; that is, applying the fundamental principles of computational science to the solution of scientific, engineering, and operational problems. His principle research interest is the application of computational heat transfer and fluid dynamics, with special interest in coupled heat-conduction/thermodynamic analyses. Technical expertise includes computational heat transfer, inverse heat conduction, enclosure-radiation heat transfer, computational fluid dynamics with solidification, engineering thermodynamics, numerical optimization, process heat transfer, integrated-systems analysis, as well as deterministic and probabilistic economic analyses. He has applied these analysis tools to such diverse systems as the gaseous diffusion uranium enrichment heat-rejection systems, sensible- and latent-heat thermal energy storage systems, the ORNL High Flux Isotope Reactor fuel system, vacuum-induction melting and casting, and immersion-quench processes. Mr. Taylor has authored approximately 40 articles and technical publications, and has received two DOE Awards of Excellence for materials-research modeling studies.

Mr. Taylor's current responsibility is Program Development and Program Management for selected DOE and DoD projects within CSE. These

activities include concept development, preparation of briefing materials, initial customer contact, proposal writing, and active participation in the problem-definition phase of the proposed research. Once new work has been implemented, Mr. Taylor will function as a Program Manager to maintain contact with the customer and coordinate with technical staff to insure the as-promised delivery of research results.

Name: Cindy L. Terry

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Scientific Computer Programming
Software Testing
Configuration Management
Computer Programming

Education: B.S., Computer Science, Cum Laude
East Tennessee State University (1983)

Experience: Cindy Terry is a Scientific Computer Programmer working on the Chemical and Biological Mass Spectrometer (CBMS Block II) program at the Oak Ridge National Laboratory. On this project, Ms. Terry is responsible for development of software for the High Level Controller for the CBMS Block II. Additional responsibilities include software testing, configuration management, and documentation. This project has been recognized with an R&D 100 Award for 2000, as well as a 2000 Technical Achievement Award from UT-Battelle.

Ms. Terry previously worked as a Computer Programmer and Component Team Leader on the Air Mobility Command Deployment and Analysis System (ADANS). In this capacity, Ms. Terry was responsible for software development, testing, and documentation as well as serving as a Team Leader for the Airlift Flow Planning & Reports teams. The ADANS project received numerous awards including a 1992 Technical Achievement Award from Martin Marietta Energy Systems, and a 1992 Association of American Geographers Applied Geography Citation Award. Ms. Terry also received two Significant Event Achievement awards while assigned to ADANS.

Name: Mary Lynn Tharp

Position: R&D Staff
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Group: Modeling and Simulation Group
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Education: B.S., Mathematics, University of Georgia, Athens, GA, 1963
M.S., Computer Science, University of Tennessee, Knoxville, TN, 1978

Experience: 1974-present - UT-Battelle, Computational Sciences and Engineering Division, Oak Ridge, Tennessee.

M. Lynn Tharp is a research and development staff member in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory. She has a M.S. in computer science from the University of Tennessee and a B.S. in mathematics from the University of Georgia. In research, she has worked on computational modeling projects related to evaluating low-level radioactive waste disposal facility source terms and assessment of forest response to environmental and land-use changes. Currently, she is incorporating improvements in a terrestrial carbon cycle model for analysis of global change impacts on terrestrial systems and feedbacks to the climate system with large scale parallel computing. Also, she is developing a model to estimate carbon fluxes and stocks associated with industrial and natural carbon sources. This new model will be used to quantify the environmental and economic issues for developing carbon management technologies and policies.

Name: Ed P. Tinnel

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Geographic Information Science and Technology Group
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Key Skills: Computer Graphics
Image Processing
Systems Integration
Systems Management

Education: M.S., Computer Science, University of Tennessee (1984)
B.S., Computer Science, University of Tennessee (1977)

Experience: Ed Tinnel has worked at Oak Ridge National Laboratory since 1979. Over that time, he has been involved in a variety of projects involving work in computer graphics, image processing, telecommunications, systems integration, systems management, world wide web applications, and real-time modeling systems for various sponsors including branches of the Departments of Energy, Defense, and Interior.

Techniques from these fields have been applied to such diverse subject areas as aerial magnetic and radiometric surveys (National Uranium Resource Evaluation), microbiology (3-dimensional reconstruction of electron microscope imagery), medical imaging (model construction from tomographic imagery), environmental information systems (Oak Ridge Environmental Information System), and 3-dimensional facility modeling and simulation. Over time, his work has exploited the computing resources available including mainframes, minicomputers, personal computers, and workstations [UNIX, of course: the One True Operating System], using a variety of languages and tools.

Name: Johnny S. Tolliver

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering
Group: Collaborative Technology
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Education: M.S., Physics, University of Tennessee, Knoxville, 1980
Ph.D., Physics, University of Tennessee, Knoxville, 1984

Experience: Tolliver has many years experience developing Fortran physics simulation codes for the Fusion Energy Division, Object-oriented C++ and Java software development, CORBA and client/server software development, Computer Security experience include “trusted” Unix operating systems.

Sun Certified Java Programmer

Name: Daniel R. Tufano

Position: Senior Staff Member, Complex Systems Group
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science & Mathematics Division
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Research Interests: Human-Systems Engineering

Education: Ph.D., Experimental Psychology, Princeton University (1980)
M.A., Experimental Psychology, Princeton University (1977)
B.S., Psychology, Georgetown University (1974)

Professional Experience:

1997-Present **Senior Research Staff Member,** Complex Systems Group, Computer Science & Mathematics Division, Oak Ridge National Laboratory. Current Research activities are primarily concerned with the specification of human commander effects and requirements in the planning and execution of Battle Management/Command and Control (BM/C2) in future Integrated Global Ballisitc Missile Defense, for the Missile Defense Agency (MDA). This work continues his involvement in the design and conduct of Wargame Experiments. He is also increasingly involved in human operator research related to the Army's Future Combat Systems (FCS) and Objective Force Warrior (OFW) programs.

1997-2001 **Research Staff Member I / Group Leader,** Human-Systems Research Group, Oak Ridge National Laboratory. Cognitive & Information Sciences Section, Computer Science & Mathematics Division, Oak Ridge National Laboratory. As leader of the Human-Systems Research Group, Dr. Tufano directed the group's involvement in diverse research activities. The group was active in areas covering applied experimental psychology, human-centered systems engineering, and data acquistion and analysis systems. He was principle investigator of a Laboratory funded project to conduct experimental research on the effects of advanced displays and intelligent systems on drivers. This research involved the instrumentation of a laboratory simulator and an automobile

1994-1997 **Research Staff Member II,** Cognitive Systems & Human Factors Group, Intelligent Systems Section, Computer Science & Mathematics Division, ORNL. As a member of the ORNL research staff, Dr. Tufano's

responsibilities were focused primarily on a portion of the Intelligent Transportation Systems concerned with the development and testing of an in-vehicle information system, which will integrate information on routing and navigation, safety and warning, motorist services, and roadway signs and present it to drivers.

1986-1994 **Manager**, Advanced Crew Station Technology, Grumman Aircraft Systems.

1993 **Adjunct Professor**, Department of Psychology, State University of New York at Stony Brook. In this part-time position, Dr. Tufano taught an upper-level undergraduate course in "Sensation and Perception". Real world applications of the topics were emphasized.

1984-1986 **Senior Engineer**, Human Factors Group, Grumman Aircraft Systems.

1983-1984 **Senior Research Psychologist**, Personnel Utilization Technical Area, US Army Research Institute.

1980-1983 **Research Psychologist**, Simulation Systems Design Team, US Army Research Institute.

1980-1981 **Adjunct Professor**, Department of Psychology Georgetown University.

Name: Joe G. Tuggle

Laboratory: Oak Ridge National Laboratory
Division: Computational Sciences and Engineering Division
Section: Systems Engineering and Technology Group
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Key Skills: Software and System Development
Operations Analysis and Planning

Education: C++ courses (1999)
JavaScript course (1999)
Sybase database courses (1993)
Isotope separation course, Univ. of Tenn. grad ChE, (1967)
M.S., Mathematics, Mississippi State University, National Science Foundation Fellowship (1967)
B.A., Mathematics, Mississippi State University, Honors, Phi Kappa Phi, Outstanding Mathematics student award (1965)

Experience: Mr. Tuggle is a System Engineer in the Systems Engineering and Technology Group, of the Computational Sciences and Engineering Division at Oak Ridge National Laboratory (ORNL). He has worked in the areas of software and system development since coming to ORNL in 1985. He developed data storage and image display software for several projects in ORNL's Energy Division. Mr. Tuggle was also a member of the team, which performed a major upgrade in the software for the security access system at the Y-12 plant. For the past 10 years Mr. Tuggle has worked in support of the Environmental Sciences Division ARM Archive project. This work has involved the development of software for archiving large numbers of data files received electronically at the archive. The archive system utilizes workstations connected to a mass storage data system and to dedicated tape drives, and relies heavily on a Sybase database system.

Prior to coming to ORNL, Mr. Tuggle worked for 18 years at the K-25 plant in the Operations Analysis and Planning Division. He worked in the areas of isotope separation theory and process economics with an emphasis on the gas centrifuge process.

Mr. Tuggle has authored or co-authored a number of reports and technical memos in the field of isotope separation. He has also co-authored reports on the design of software systems and the design of data archive systems.

Name: D. Michael Turpin

Position: Group Leader
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Division: Networking & Computing Technologies
Section: Network Services
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Key Skills: Information technology infrastructure management and planning

Education: BS in mechanical engineering, Tennessee Technological University, 1976
MS in mechanical engineering, Tennessee Technological University, 1977

Experience: Mike is the Group Leader of the Network Services Group in the Networking and Computing Technologies Division at Oak Ridge National Laboratory. The Group has eighteen staff members who provide infrastructure data and video networking for ORNL and other facilities on the Oak Ridge reservation. Half of the staff has BS or MS degrees in engineering or computer science and the balance (includes nonexempt network technicians) have technical associate's degrees or significant technical experience. The Group has expertise in all aspects of infrastructure data networking (LAN, WAN, remote access, security technologies, etc.). In addition, two staff members are routine participants in the design and implementation of SCinet, the network for the annual International Conference for High Performance Computing and Communications (see http://www.sc2001.org/scinet.shtml).

Mr. Turpin began his career in Oak Ridge as a process support engineer at the Oak Ridge Gaseous Diffusion Plant where he was involved with computer data acquisition/management and process control. At the demise of this facility in 1985, he transferred to the three-site central IT organization where he was responsible for the management of support for electronic mail and personal computers within the three Oak Ridge contractor-operated facilities. In 1990, he assumed responsibility for the management of the computer networking function within the three-site central IT organization. In 1996, he (and his group) moved to ORNL as part of ORNL contract separation; however, they continue to provide support (under MOU) to the other two Oak Ridge facilities. Mr. Turpin was instrumental in the development of the Knoxville-area Regional Internet Traffic Exchange (RITE) and serves on the advisory board for the University of Tennessee, Knoxville's network, VolNet (http://volnet.utk.edu/).

Name: Moneesh Upmanyu

Position: Postdoctoral Research Associate
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Education: Postdoctoral Research Associate, Computational Materials Science Group, Computer Science and Mathematics Division, ORNL, May 2001 - Present

Postdoctoral Research Associate, Princeton Materials Institute, Princeton University, February 2000 – May 2001

Ph.D., University of Michigan, Materials Science and Engineering, September 1995 –December 2000

Thesis: Grain Boundary Migration: Atomistic Simulation Studies
Theses Advisor: Professor D. J. Srolovitz

Collaborated with Research Groups in Institutes, National Laboratories (SNL, LANL, NIST, ORNL) and universities (MIT, CMU, Ohio State)

Presented and published over 25 papers in international conferences and journals

M.S., University of Michigan, Materials Science and Engineering (3.75/4) September 1995 – February 1997

Thesis: Atomistic Simulation of Curvature Driven Grain Boundary Migration
Thesis Advisor: Professor D. J. Srolovitz

B. Tech., Indian Institute of Technology, Bombay, Metallurgical Engineering and Materials Science (3.80/4), May 1995

Senior Thesis: Constitutive Studies on Superplastic Nuclear Material
Thesis Advisor: Professor K. Narsimham

Junior Thesis: Sol-Gel Route for the Fabrication of PTCR Barium Titanate
Student Member, Indian Institute of Metals, Bombay Chapter

Name: Becky J. Verastegui
Position: Chief Information Officer and Division Director
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Key Skills: Information technology (IT) infrastructure leadership, Technology vision and strategic planning

Education: Bachelor of Science, Business Administration Accounting Major; Computer Science Minor, University of Tennessee, 1977

Experience: Becky is Chief Information Officer (CIO) and the Division Director of the Networking and Computing Technologies Division at Oak Ridge National Laboratory. The Division has 70 Staff members and 25 subcontractors who provide strategic information technology solutions for ORNL's diverse business and scientific information infrastructure. Her Division provides data and voice networks, email and web infrastructure, business systems, and all the support aspects of the Lab's IT infrastructure including cyber and information security, computer helpline, workstation and desktop support, applications programming, and computer operations. As CIO, she leads the Laboratory's strategic information infrastructure initiatives and ensures operational compliance with DOE Orders and regulations.

Outside the Laboratory, Becky currently serves on the Executive Committee for the annual Super Computing conference and serves as Executive Secretary on the DOE Laboratory's System of Laboratories Computing and Communications Council. She is a working group chair on the DOE Office of Science's information management review team. She has been keynote speaker and panelist at several national information technology conferences and has coauthored several magazine articles and strategic planning documents.

Becky has worked at DOE's Oak Ridge facilities for 25 years in a variety of computing-related positions. She started as a programmer/analyst and in her early days served on the American National Standards Institute X3J4 Committee that made radical changes to the business, programming environment. In 1993 she was hired by ORNL to direct the Lab's administrative computing activities and was a pioneer in ORNL's early entrée into the World Wide Web. Prior to her current position, Becky was instrumental as Director of ORNL's aggressive implementation of SAP enterprise resource planning software for business and human resources functions—a multi-year, multi-million dollar effort which was implemented on schedule and under budget.

Name: Richard C. Ward, Ph.D.

Position; Senior R&D Staff
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Education: Ph. D., Physics, University of California, Riverside (1978)
M.A., Physics, University of California, Riverside (1973)
B.A., Physics, University of California, Riverside (1971)

Experience: Twenty-two years experience in computer modeling and simulation in the physical and biological sciences including: human modeling, health physics, turbulence, phase transitions, condensed matter physics, and groundwater modeling. Experience in designing graphical user interfaces and computational environments that utilize distributed and parallel computing.

Name: Jack C. Wells

Position: Research Staff Scientist, Computational Nanotechnology
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Division: Computer Science and Mathematics Division
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Key Skills: Modeling, Simulation, and Design of Nanoscale Materials and Devices, Time-Dependent Methods and Algorithms for Quantum Dynamics,

Education: Ph.D., Theoretical Physics, Vanderbilt University, 1994
M.S., Physics, Vanderbilt University, 1989
B.S. Physics, Centre College (Magna Cum Laude), 1985

Experience: Jack is a research staff member in the Computational Materials Science Group of the Computer Science and Mathematics Division at ORNL and of the Center for Engineering Science Advanced Research (CESAR). From 1994 until 1997, Jack was an Institute Fellow at the Institute for Theoretical Atomic and Molecular Physics (ITAMP) at Harvard University and the Smithsonian Astrophysical Observatory. During this time period, Wells maintained an active research relationship with ORNL's Center for Computational Sciences (CCS) and with the Physics Division. Wells also participated in two long-term programs at the Institute for Theoretical Physics (ITP) at the University of California at Santa Barbara (Time-dependent Processes in Atomic Physics, 1991; New Ideas for Particle Accelerators, 1996). In 1997, Wells joined the staff at ORNL as a Wigner Fellow in the CCS. In 1999, Wells joined the research staff of the Center for Engineering Science Advanced Research (CESAR) in the Computer Science and Mathematics Division. In 2000, Wells was appointed as Leader of the Computational Nanotechnology Group. His research interests include the theoretical description and numerical simulation of nanoscale materials and devices, with applications implemented on high-performance parallel computers.

Outside ORNL, Jack is an active member of the American Physical Society (APS) and the Materials Research Society (MRS), and regularly serves as referee for *The Physical Review*, *The Journal of Physics*, *Chemical Physics Letters*, and *Computer Physics Communications*, and as a panel reviewer for the DOE and National Science Foundation (NSF), including DOE's Programs in Nanoscale Science, Engineering, and Technology Research (NSET), 2001; Engineering Science Research, 2000; and Small Business Innovation Research (SBIR), 2001; NSF's Programs in Atomic, Molecular, and Optical (AMO) Theory, 1997-2001; Information Technology Research/Revolutionary Computing (ITR/RC)

2001; Quantum and Biologically Inspired Computation (QuBIC) 2001. He is an Adjunct Professor in the University of Tennessee's Department of Physics and Astronomy.

Jack has leadership responsibilities for CESAR's program in Computational Nanoscale Science in identifying strategic research directions and themes and programmatic research support. In FY 2002, CESAR's Nanotechnology Research Program has grown to a size of approximately $1M. Jack received a Development Accomplishment Award from ORNL in 1999 in Technical Achievement for excellence in computational physics algorithms and employment of strategies to enhance the next-generation supercomputers. He has published approximately 50 articles in the areas of atomic, nuclear, computational, and nanoscale physics.

Name: Robert A. Whitaker

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Section: Systems Engineering and Technology Group
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Key Skills: Software Application

Education: B.S. in Computer Science, University of Tennessee (1984)
M.S. in Software Engineering, East Tennessee State University (2000)

Experience: Bob Whitaker has over fifteen years experience in software application development, system design and database administration. He has shown proficiency in C++, Object Pascal, SQL-92, ORACLE, and Access. He has worked in the DOS, Windows 95/NT/2000 and UNIX operating system environments, and has developed client/server, TCP/IP, and stand-alone applications in Delphi, C++ Builder, PowerBuilder, and Visual FoxPro. Mr. Whitaker served as Systems Administrator and Database Administrator of the Y-12 Site Oak Ridge Environmental Information System (OREIS); he also was DBA of the Bechtal Environmental Integrated Database Management System (BEIDMS). He is currently involved with the Chemical Biological Mass Spectrometer project doing C++ application development in the Windows NT environment.

Name: James B. White III (Trey)

Position: Research Computer Scientist
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
Group: Scientific Applications Support Group
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Key Skills: High-Performance Computing
Computational Science
Software Engineering

Education: B.S. in Physics with Honors, Rhodes College (1992)
M.S. in Physics, The Ohio State University (1996)

Experience: Since shifting his primary interest from computational nuclear physics to applied high-performance computation, Trey has gained expertise in a wide variety of parallel architectures and programming paradigms. At the Ohio Supercomputer Center (OSC), Trey provided application support and documentation for a variety of vector and parallel systems. As an OSC employee at the ERDC MSRC, one of the four major HPC centers for the Department of Defense, Trey was a computational scientist in the Computational Migration Group.

Since arriving at ORNL in March of 1999, Trey has been the primary contact for application support and documentation for the HPC systems of the Center for Computational Sciences. To complement his interest and expertise in the practical aspects of applied high-performance computing, Trey pursues research in improved techniques for scientific computation, from numerical algorithms to parallel paradigms and languages.

Professional Tutorials committee, SC2002
Tutorials committee, SC2001
AV Chair, SC2000
Program Chair, SCICOMP4

Affiliations: Founding member, IBM SP Scientific Computing User Group (SCICOMP)
Founding member, Compaq Advanced Scientific and Technical Users' Group (CAST)

Name: Vicky White

Position: High Performance Computer Systems Administrator
Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division
Group: Computer Systems and Operations Group
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Key Skills: Programming (Java, C, Perl, Shell)
Unix System Administration

Education: B.S. in Computer Science, Tennessee Technological University (1984)

Experience: Ms. White supported Unix systems for four years at the Naval Surface Warfare Center in Dahlgren, Virginia before coming to ORNL in 1988. In Oak Ridge she helped manage the Cray supercomputer at K25, including its conversion from CTSS to Unicos. She was later a member of the Open Systems Implementation and Migration team which installed the first Unix-based business systems at ORNL.

Since 1993 she has been part of the development team for the High Performance Storage System (HPSS), the hierarchical storage management system used at ORNL. She wrote the original System Manager component of the graphical operator and administrator interface to HPSS (SSM), made contributions the client application-programming interface, and helped write the ASCII-based administrator interface to the system in Java (hpssadm). For a portion of this time she served as the first-line HPSS system manager.

Along with other HPSS developers at ORNL, LLNL, LANL, SNL, and IBM Global Services, Ms White was awarded an R&D100 award in 1997 for HPSS for one of the 100 Most Technologically Significant New Products of the Year.

She is currently working with other SSM developers to convert the graphical SSM to Java, extending the work she did on hpssadm, and continues to provide second-line support for the ORNL production storage system.

Name: Paul T. Williams, Ph.D., P.E.

Position: Senior R&D Staff
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Group: Modeling and Simulation Group
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Key Skills: Computational Fluid Dynamics and Heat Transfer
Computational Mechanics
Radiation Heat Transfer
Cryogenic Heat Transfer Applications
Thermodynamic Cycle Analysis
Thermal-Hydraulic Analysis
Heat Exchanger Performance Analysis

Education: B.M.E., Georgia Tech.: School of Mechanical Engineering, 1973
M.S.M.E. (thermal science), 1974

University of Tennessee: Engineering Science and Mechanics Dept.
M.Sc. (computational mechanics), 1989
Ph.D. (computational fluid dynamics), 1993

Experience: Union Carbide Corporation Nuclear Division: Oak Ridge Gaseous Diffusion Plant Co-op Student in ORGDP's Gaseous Diffusion Development Division, 1968-1972 Responsible for running heat exchanger core tests in support of new gas cooler development and procurement studies.

Development Engineer in Gaseous Diffusion Development Division, 1974-1980 Responsible for thermal-hydraulic and thermodynamic analysis, development, and design of thermal systems for the Gaseous Diffusion Plants including: process gas coolers, refrigerant condensers, thermosyphon systems, mechanical draft cooling towers, freezer-sublimers, air- and oil-cooled power transformers, UF6 cold traps, and power recovery systems.

UCCND and Martin Marietta Energy Systems (after 1984): Development Engineer in AVLIS Division, 1980-1986. Responsible for thermal analysis in support of Atomic Vapor Laser Isotope separation (AVLIS)

program. Developed methods and computer codes to model the high-temperature radiation heat transfer and thermal loading in an AVLIS system.

Oak Ridge National Laboratory (Lockheed Martin Energy Research) Development Staff Member in Computing Applications Division (formerly C&TD) , 1986-present. Responsible for providing computational expertise in the fields of computational heat transfer, computational fluid dynamics, thermodynamics, and thermal-hydraulic analysis of thermal systems. Code development work includes the Refrigerant Hydraulics Analysis Program (REHAP) used to model the thermosyphon heat removal system in a gaseous diffusion cell.

Name: Torsten Wilde

Position: Research Associate
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
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Key Skills: Component and object oriented development, user interface design, distributed computing environment, and scientific visualization

Education: Advanced European Master of Science for Parallel and Scientific Computation, University of Liverpool, UK (2000)
Diplom Engineer (FH) for Computer Science, University of Applied Sciences and Business of Berlin (FHTW-Berlin), Germany (2000)

Professional Experience:

Torsten has been working on integrating the CUMULVS distributed computing environment into different scientific visualization environments, like VTK (visualization toolkit), the CAVE Virtual Reality Environment and the AVS/Express visualization framework. This work involves program design and development using object and component based technologies, scientific data transformation and scientific visualization techniques.

Torsten is actively involved in the specification and development of the CCA forum and CCTTSS SciDAC center, with emphasis on the GUI (Graphical User Interface) and components for parallel data redistribution (MxN), visualization, and computational steering.

Torsten has work at DOE's Oak Ridge facility since April 2000. Since then he participated at various conferences. For ICCS2001, he presented his paper "CUMULVS viewers for the ImmersaDesk" and will present his current paper "Integrating CUMULVS into AVS/Express" at ICCS2002.

Name: William R. Wing

Position: Network Architect, Network Research Group, CS&M Division
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics Division
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Key Skills: Technology Vision, Strategic Planning

Education: Bachelor of Science, Physics Major
Master of Science in Physics
Phd, Physics, University of Iowa, 1972

Professional Experience:

Bill Wing joined the Fusion Energy Division immediately after completing his PhD. He developed and applied a wide variety of diagnostic instruments for characterizing the fusion plasmas in experimental devices there. He received a patent for one of these, a Gigacycle Correlator. While there, he started using early laboratory-scale computers (PDP-8, PDP-12, and a PDP-10) for data acquisition and analysis. He led the in-house programming group responsible for writing data acquisition software and developed an integrated data acquisition system that spread throughout the fusion community. His interest in computerized analysis and modeling led to an interest in networking (ORNL's Fusion Energy Division was one of the first backbone nodes on the Magnetic Fusion Energy Network, which linked Fusion sites to the MFE computer center at Livermore). In 1991, he moved from the Fusion Energy Division to the Office of Laboratory Computing to help improve ORNL's position in the high-performance computing and networking community. In 2000, he transferred to CS&M division to join the network research group.

Outside the laboratory he serves as chair of the ESnet Coordinating Committee (which provides technical guidance, sponsors technology trials, and coordinates best practices across the DOE major sites and facilities served by ESnet. In 1999, he served as chair of the SCinet committee for SC'99 in Portland, and then was asked to chair this activity again for SC01 in Denver. Finally, he serves on the ESnet Steering Committee.

Professional Societies: IEEE, and American Physical Society

Name: Dennis A. Wolf

Laboratory: Oak Ridge National Laboratory
Division: Computer Science and Mathematics Division

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Key Skill: Statistics, data analysis, graphical methods, statistical computing, multivariate analysis, regression analysis

Education: BA, Mathematics/German, Central College, Pella, Iowa (1970)
MS, Mathematics/Statistics, University of Iowa (1976)
PhD, Statistics, University of Wisconsin (1986)

Professional Experience:

1986 – 2002 **Statistician**, Computer Science and Mathematics Division, Oak Ridge National Laboratory. Consulted with geologists, environmental scientists, engineers, chemists and biologists. Consulted primarily in areas of environment and chemistry in last 16 years

Professional Societies: Membership in: American Statistical Association, Royal Statistical Society, International, Environmetrics Society

Associate editor for: Journal of Statistical Computation and Simulation

Name: Patrick H. Worley

Position: Research Staff
Laboratory: Oak Ridge National Laboratory (ORNL)
Division: Computer Science and Mathematics
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Key Skills: Computer performance evaluation; Parallel algorithm design and implementation; Numerical Analysis

Education: Ph.D., Computer Science, Stanford University, 1988
M.S., Computer Science, Stanford University, 1983
B.S., Computer Science and Mathematics, Indiana University, 1975

Experience: Dr. Worley has been at ORNL since 1987. He currently leads ORNL's Evaluation of Early Systems Project and participation in the DOE SciDAC project in Performance Evaluation. He is also an important contributer to the SciDAC project in Climate Modeling. Dr. Worley's educational background and work experience are in numerical analysis and parallel computing, with an emphasis on the solution of partial differential equations. His current research interests include parallel algorithm design and implementation, and performance evaluation of parallel applications and computer systems. Dr. Worley's parallel algorithm work ranges from theoretical investigations into what is feasible based on information theoretic concepts to the design and implementation of parallel algorithms in atmospheric and ocean simulation models. Dr. Worley's work on performance evaluation has four aspects: (1) performance data collection, visualization, and analysis, (2) benchmarking and benchmarking methodology, (3) performance modeling, and (4) performance portability. Dr. Worley is secretary of the SIAM Special Interest Group in Supercomputing and the moderator of the Performance distribution list for the ACM Sigmetrics special interest group. He is also a member of the editorial board for The Journal of Performance Evaluation and Modeling for Computer Systems and a member of the NSF Software Engineering Working Group for the Community Coupled System Model. Dr. Worley was a member of Advisory Panel for NSF Knowledge and Distributed Intelligence initiative (KDI) in 1998 and a member of the Review Panel for the NSF Partnership for Advanced Computational Infrastructure (PACI) program in 2001.

Name: Mark W. Yambert

Position: R&D Staff
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Division: Computational Sciences and Engineering
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Key Skills: Parallel computing, finite element model algorithm development, FORTRAN, C, AutoCAD, PATRAN, ABAQUS, CFX, MATHCAD, Access/FoxPro, MapInfo,
Earth Vision, HTML, Excel

Education: Bachelor of Engineering Science and Mechanics with Highest Honors, Cooperative Plan, Georgia Institute of Technology, March, 1985. Grade Point Average 3.7/4.0.

Currently finishing work on Master's Thesis at the University of Tennessee, Knoxville in the Computational Fluid Mechanics program of the Department of Engineering Science and Mechanics. Current Grade Point Average 3.95/4.0.

Experience: Computational fluid and solid mechanics, structural analysis and design, heat transfer, computer modeling of groundwater flow and contaminant transport in porous media, performance assessment of nuclear waste disposal facilities, computer programming, atmospheric dispersion modeling and consequence analysis, probabilistic risk assessment.

Developmental Staff Member, Oak Ridge National Laboratory. Duties include three-dimensional solid modeling, heat transfer and fluid flow analysis, groundwater flow and contaminant transport modeling, atmospheric dispersion modeling.

Aircraft Structures Engineer, Lockheed Georgia Corporation. Duties included general stress analysis and finite element modeling of aircraft structures.

Cooperative Student, Dow Chemical Company. Duties included research and production support of extruded, plastic films.

Cooperative Student, Dow Chemical Company. Duties included structural analysis of nuclear power plant piping systems.

Professional Societies: Society of Engineering Science, 1982
Tau Beta Pi, 1983

Name: Teresa G. Yow

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Key Skills: Database Design and Development
Systems Analysis and Design
User Interface Design and Development
Web Site Design and Development

Education: B.A. in English, Pfeiffer College (1971)
M.A in English, University of Tennessee (1974)
Ph.D. in English, University of Tennessee (1980)

Experience: Teresa G. Yow is a member of the Systems and Engineering Technology Group in the Computational Sciences and Engineering Division at Oak Ridge National Laboratory. She is currently the database administrator and designer (Sybase RDBMS on UNIX server) for the Distributed Active Archive Center (DAAC), one of eight NASA data warehouses for the storage and retrieval of interdisciplinary scientific data collected as part of NASA's Mission to Planet Earth ecological program. She also designed and maintains the databases for the Mercury project, which are managed using SQL Server on an NT platform.

Dr. Yow has over 20 years experience in computer systems analysis, design, and deployment; database design and administration; and user interface design. She has worked on a variety of projects for the Department of Defense, the Department of Energy, NASA, and FEMA. She is the author of numerous journal publications and conference presentations.

Name: Jianxin Zhong

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Key Skills: Modeling, Simulation, and Design of Nanoscale Materials and Devices, Simulations of Quantum Transports in Nanoscale and Mesoscopic Systems

Education: Ph.D., Condensed Matter Physics, University of Cergy-Pontoise
National Center for Scientific Research, France, 1995

Experience: Jianxin received his Ph.D. degree in theoretical condensed matter physics from the University of Cergy-Pontoise and the National Center for Scientific Research, France, in 1995. Since then he has worked successively at Xiangtan University (China), Max Planck Institute (Germany), Chemnitz University of Technology (Germany), University of Tennessee at Knoxville, University of Texas at Austin, and Solid State Division of ORNL. In 2001, he joined the Computer Science and Mathematics Division and the Center for Engineering Science Advanced Research (CESAR) at ORNL.

Jianxin's research field is condensed matter physics and computational materials science. He uses a variety of analytical and computational techniques to explain existing experimental results and make predictions that can be tested experimentally. Analytical techniques include rate-equation analysis, strain theory, scaling theory, renormalization groups, theory of fractal geometry, and random matrix theory. Computational techniques include kinetic Monte-Carlo simulation, density functional electronic structure calculation, multi-fractal analysis, and quantum dynamics simulations.

Jianxin's earlier research effort (before 1995) was devoted to quasi-

crystals and porous silicon. In recent years, his research focus has been on growth of nanoscale materials and quantum transports in nanoscale and mesoscopic systems. Current research projects include fundamental mechanisms of thin-film growth, morphological evolution and control of nanostructures, strain-driven growth of semiconductor and magnetic quantum dots, laser manipulation of atoms and nanostructures at surfaces, nanoimprint lithography, quantum dynamics, quantum chaos and operability of quantum computers. His research has resulted in 55 publications in refereed journals and conference proceedings including three in Physical Review Letters. He has also had over 40 invited and contributed presentations including one invited talk at the APS March meeting on morphological evolution and control of surface nanostructures. Jianxin is a member of the American Physical Society and the Materials Research Society.