

Computing for Biology Workshop Draws Overflow of Participants

A Computing for Biology workshop, co-organized by the IBM Computational Biology Center and BNL, was held on site last week, July 31-August 1. BNL and IBM are both building hot-topic supercomputers. QCDOC — for quantum chromodynamics (QCD) on a chip — was designed by Columbia University and RIKEN BNL Research Center scientists for QCD research, and BlueGene/L, designed by IBM for applications in the life sciences, is planned to be installed at Lawrence Livermore National Laboratory (LLNL).

More than 150 scientists from the northeast and worldwide registered for the workshop, originally expected to draw 100 participants. The workshop goal was to promote research that uses computational techniques to simulate and predict behavior of various biological processes that can then be verified and stimulate new experiments far more quickly and less expensively than is now possible.

In greeting participants, Peter Bond, BNL's Interim Director of the Information Technology Division and a workshop co-organizer who chaired the first session, explained, "In ad-

dition to learning about the interesting calculations going on now, we hope to hear about problems that you want to compute but that cannot be computed at present — and why."

BNL Director Praveen Chaudhari then described the Lab and some of its science facilities. He noted that the National Synchrotron Light Source (NSLS) — the world's most used facility — provides one-third of its beam space

to life-science researchers, primarily from the northeast.

Chaudhari highlighted BNL's exceptional computational science capability, which has been motivated by computer-intense high energy and nuclear physics experiments. QCDOC, the latest special-purpose machine being built at BNL, is a \$5-million, 10-teraflop (10 million million floating point operations per second) supercomputer.

The computer's first chip, built by IBM, was delivered six weeks ago, and "It works," Chaudhari said. Already, the British government has ordered the second QCDOC. BNL hopes, Chaudhari said, to acquire a 20-teraflop version for the U.S. QCDOC community.

"Is there a need for computing power in biology?" queried Chaudhari. "What kind is needed and is such power avail-

able today? Does it make sense to have a large computational biology facility, and if so, should it be located at BNL, surrounded by richly intellectual universities and a very large number of pharmaceutical companies?

"We think it makes sense for the Office of Science [to support such a facility at BNL]" he concluded.

Aristides Patrinos, DOE's Associate Director for the Department of Biological & Environmental Research, spoke next. Patrinos had overseen DOE's massive and successful Human Genome Project, the complete sequencing of the human genome, which was officially completed and celebrated on April 14 of this year.

"The Office of Science is extremely proud of its legacy science user facilities, DOE's unique resources for the international community," said Patrinos. He had been a member of BNL's Department of Applied Science [1980-88], when the NSLS first came on line, and has watched its "incredible growth," he said, noting that, as in the other three of DOE's light sources, this growth has been especially marked in the life sciences. (continued on page 2)

Computing for Biology Workshop organizers, session chairs, and speakers included: (front, from left) Klaus Gawrisch, National Institutes of Health; Gustavo Stolovitzky, IBM; Jed Pitera, IBM; Terry Sejnowski, Salk Institute; Aristides Patrinos, USDOE; Ajay Royyuru, IBM; Bill Pulleyblank, IBM; Richard Pastor, U.S. Food & Drug Administration; (back, from left) Alex MacKerell, University of Maryland; Mike Pitman, IBM; Richard Friesner, Columbia University; Praveen Chaudhari, BNL; Bruce Berne, Columbia; Chris Sander, Memorial Sloan Kettering Cancer Center; Ravi Iyengar, Mount Sinai School of Medicine; Emad Tajkhorshid, University of Illinois; Peter Bond, BNL; Arnie Peskin, BNL; Bob Germain, IBM; Carl Anderson, BNL; and Jim Davenport, BNL.



Roger Stoutenburgh 02300703



Roger Stoutenburgh 02300703

Meet Shirley Kendall, BNL's Diversity Manager

Shirley Kendall, former Diversity Coordinator for the City of Rochester, NY, has been named BNL's Diversity Manager, effective July 7.

In her new position, Kendall is responsible for implementing BNL's affirmative action program to assure representation of women and minorities in the workforce

to the extent that they are available in relevant labor markets. The Lab also undertakes affirmative action for disabled individuals, Vietnam veterans, and disabled veterans. As a federally funded institution, BNL is governed by federal regulations such as affirmative action compliance and equal employment opportunity laws.

Kendall also serves as Coordi-



Shirley Kendall

Division, investigates sexual harassment complaints of employees.

"I joined BNL for many reasons, not the least of which is my appreciation for the process of discovery," said Kendall. "My goal is to work closely with world-class scientists, top-notch managers and dedicated em-

ployees to assist Brookhaven in becoming a frontrunner in talent diversity among DOE national laboratories.

"Experience has taught me that an organization's senior leadership team holds the key to its success in the area of diversity," Kendall continued. "As a member of the management team, I look forward to achieving success (continued on page 2)

Roger Stoutenburgh 01920703

IBEW Contract Ratified

On July 31, 2003, the membership of Local 2230 of the IBEW (International Brotherhood of Electrical Workers) ratified a three-year contract with Brookhaven Science Associates, which manages Brookhaven Lab for DOE. The new contract will be in effect from August 1, 2003, to July 31, 2006.

About 14 percent, or 422, of BNL's 2,893 employees are represented by Local 2230, which covers employees who range from custodians, grounds workers, and clerks, to the traditional trades such as electricians, carpenters, and machinists.

Here are the major points of the new contract, in a Q&A format:

Q: What percent salary increase will the union workers get?

A: BNL employees represented by IBEW Local 2230 will receive salary increases of 4 percent each year for the next three years, effective August 1, 2003.

Q: Are there changes to the IBEW workers' medical contributions?

A: Yes. Effective January 1, 2004, IBEW workers will contribute a percentage of their base wages to help pay for medical coverage. The percentage will vary depending on how many persons are covered by medical insurance, as follows: for employee coverage only — 3 percent, for employee plus one person — 3.5 percent, for employee plus two or more persons — 4 percent.

Q: Will IBEW workers see changes to their medical benefits?

A: There will be no change in the medical benefits for union members.

Kay Davis and the Mystery of the Solar Neutrino Puzzle

What are neutrinos?

They are mysterious, they little parts of stuff, and, like ghosts, they can go right THROUGH things.

(These are cartoon neutrinos. REAL neutrinos are so small, you could not see them.)

(You could still find "evidence" for them.)

Some neutrinos are made in the burning flames of the Sun - they are called "solar neutrinos."

As the solar neutrinos get to the Earth, they go right through it - day and night.

He wanted to catch some to see what they were really like.

Scientist Kay Davis at Brookhaven Lab knew the solar neutrinos were passing right through him.

How could he catch little ghosts that pass right through everything?

(Don't forget, neutrinos are too small to see!)

He found a way!

In a tank of very special fluid, he managed to catch a few solar neutrinos in the fluid.

To make sure he caught only neutrinos, he put the tank of fluid deep down in an underground mine. Only neutrinos could travel that far down through the Earth.

Kay did succeed in catching some neutrinos from the Sun, but when he counted them, there were not enough!

According to what scientists know about how the Sun burns, and how many neutrinos come out of the Sun, Kay should have caught **MORE**.

It was a real PUZZLE! What should he do?

REWARD! MISSING SOLAR NEUTRINS

With his team, Kay first checked all the equipment.

Then he did the experiment all over again.

But he found the same answers ...

He should have caught three times as many neutrinos!

Scientists know that although neutrinos are so small and all pass through nearly everything, there are really three kinds.

- 1) electron neutrino
- 2) muon neutrino
- 3) tau neutrino

(Say those "new-oo" say tau like "too!")

Scientists also know that all neutrinos made by the sun are **ELECTRON** neutrinos.

Some electron neutrinos from the Sun have lots of energy - high energy.

Some have medium energy.

and some have low energy.

The fluid in Kay's tank could only catch the HIGH and some of the MEDIUM energy neutrinos.

So ... maybe Kay's low result might mean that the Sun did not make as many high and medium energy neutrinos as scientists expected.

To check this possibility, Kay and other scientists thought of another liquid ...

... that might catch solar neutrinos of ALL energies.

Brookhaven Lab scientists joined another experiment using the new liquid.

The experiment, called **BALLAX**, was deep inside a tunnel under the mountains of Italy.

But the **BALLAX** experiment and other big experiments in Japan and Russia all found that there were solar neutrinos **MISSING!**

It was **STILL** a PUZZLE!

Then, Brookhaven scientists joined other scientists in an experiment called **SNO** in Canada.

This time, they were **SURE** they could find out what was happening to the solar neutrinos.

The **SNO** experiment was looking for:

- How many electron neutrinos it could catch,
- and, how many **OTHER** neutrino types it could catch.

(Remember, there are muon and tau neutrinos around as well!)

The **SNO** experiment had an amazing, brand new result ...

First, there were **STILL** not as many electron neutrinos as expected,

and the missing amount was about the same as in Kay's original experiment.

Second, the **SNO** experiment caught muon and tau neutrinos,

and, if you added the number of muon and tau neutrinos, they accounted for the number of electron neutrinos that had seemed to be "missing"

BUT all the solar neutrinos started in the sun as electron neutrinos!

Somehow, on the way to Earth many electron neutrinos were changing to muon or tau neutrinos.

So, the **SNO** results showed that the total number of neutrinos from the Sun was what scientists had expected.

Brookhaven Lab's Kay Davis, who first found the puzzle of the missing solar neutrinos, won the Nobel Prize, because he was right, electron neutrinos from the Sun **WERE** "missing"

We now know that the electron neutrinos change into muon and tau neutrinos.

But how do they change? Why do they change?

(These little mysterious are still mysterious!)

Becomes a scientist and try to find out!

For more information, go to www.sno.gov/ndweb/ndweb.html

Created by Liz Seubert and John Galvin
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with images adapted from Edward Rabin
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Brookhaven National Laboratory
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Classified Advertisements

Placement Notices

The Lab's placement policy is to select the best-qualified candidate for an available position. Candidates are considered in the following order: (1) present employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present employees within the Laboratory; and (3) outside applicants. In keeping with the Affirmative Action Plan, selections are made without regard to age, race, color, religion, national origin, sex, disability or veteran status. Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and, second, for open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people. Except when operational needs require otherwise, positions will be open for one week after publication. For more information, contact the Employment Manager, Ext. 2882; call the JOBLINE, Ext. 7744 (344-7744), for a list of all job openings; use a TDD system to access job information by calling (631) 344-6018; or access current job openings on the World Wide Web at www.bnl.gov/HR/jobs/default.htm.

LABORATORY RECRUITMENT - Opportunities for Laboratory Employees.

TB298. ADMINISTRATIVE SECRETARY (A-2) - Requires a minimum of 6 years' relevant experience, knowledge of E-Way, PeopleSoft, Excel, Word, PowerPoint and Outlook, excellent communication skills, and the ability to organize, prioritize, and implement assigned tasks. Responsibilities will include per-

forming routine and non-routine administrative tasks for the QOL/BERA/Recreation Office. Will assist in the coordinating, planning, and organizing of various meetings, programs, and initiatives within the Office, including, but not limited to, attendance and taking minutes at the QOL Steering Committee meetings, attending Hospitality meetings, coordinating book/video drive and farmer's market, summer camp, swim program, status reports of projects, ordering equipment/supplies, creating and editing documents and notifications, and creating and tracking of ILR's and work orders. Position will require contact and coordination with all levels of Laboratory staff as well as liaison with outside organizations. Staff Services Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

MK2835. POSTDOCTORAL RESEARCH ASSOCIATE - Requires Ph.D. in chemistry, physics, material science or chemical engineering. Experience in UHV surface science, synchrotron radiation techniques and knowledge of surface chemistry/kinetics is highly desirable. Research will involve surface science experiments on well-defined surfaces using UHV experimental techniques (electron spectroscopies, thermal desorption, infrared spectroscopy, STM) and preparation, characterization of model catalysts and evaluation of their reactivity. Work will be done at the NSLS U7A beam line. Under the direction of J. Hrbek, Chemistry Department.

MK2583. POSTDOCTORAL RESEARCH ASSOCIATE - (reposting) Requires a Ph.D. in high-energy or nuclear physics. Experience with production and analysis of event data from large high-energy or nuclear physics experiments is desirable as is experience in the collaborative development of software to support such experiments. Knowledge of C++, XML, Unix, grid computing, Python and

Java is also desirable. Research will be in the Physics Application Software Group, which develops software and carries out other computing activities in support of the ATLAS experiment. Principal activities of the group are in the development of the physics data management system and the distributed data analysis system of ATLAS. Depending on the candidate, an initial post at CERN for a period of up to 1.5 years could be considered. The level of the position will depend on the candidate, with possible levels ranging from a research associate to a senior software professional. Under the direction of D. Adams, Physics Department.

TB2622. ADMINISTRATIVE SERVICES ASSISTANT (A-2, term appointment, reposting) - Requires an AAS degree in business, accounting or a related field, Bachelor's degree desirable. Must have knowledge of MS Excel; MS Access experience and familiarity with PeopleSoft is desirable. Responsibilities will include administrative duties related to the NSLS stockroom, NSLS space charge generation, assistance with procurement activities and other duties in support of the NSLS Budget/Administration Group. National Synchrotron Light Source Department.

TB2732. OFFICE SERVICES ASSISTANT (CW-2, part-time appointment) - Requires an AAS degree in secretarial science or equivalent experience, good communications skills and knowledge of Laboratory policies and procedures. Proficiency in Microsoft Word, Access and Outlook is required. Responsibilities will include providing support to the CEGPA Directorate including answering the telephones; ordering supplies; maintaining databases, distribution lists, and files; and coordinating meetings as well as providing clerical support as needed. This position will also in-

clude extensive interaction with Lab employees and the public. Experience with web requisitions and the IPAP travel system is desired. Community, Education, Government & Public Affairs Directorate.

NS3289. PUBLIC AFFAIRS REPRESENTATIVE (A-4, part-time 50 percent) - Requires a bachelor's degree, preferably a master's degree, in elementary education, plus a minimum of five years' teaching experience. Knowledge of and experience in the Inquiry method is required; Middle School experience and informal education experience are a plus. Strong interpersonal and communication skills, with the ability to work well in and adapt to diverse group settings, are necessary. Will be responsible for teaching science programs in the BNL Science Museum and in Suffolk County Schools. Office of Educational Programs/Museum Program. Community, Education, Government & Public Affairs Directorate.

Motor Vehicles & Supplies

01 FORD TAURUS - silver, 3L, 50K mi., a/t, a/c, all pwr., am/fm/cass, well maint., \$9,000. Henri, Ext. 8294 or 776-2779.

00 CHEVY ASTRO VAN - 8 pass., loaded, leather, rear a/c, rear radio, factory warr., 45K mi., mint cond. Ask. \$12,800. Claudia, Ext. 3467.

99 VOLKSWAGON PASSAT - a/t, a/c, all pwr., 64K mi., excel. cond. in/out, 8K left on B/B warr., 6-disk CD, all records. \$11,500. Lou, Ext. 4312 or 732-1028.

96 CHEVY CAVALIER - a/t, a/c, p/s, p/b, 68K mi., excel. cond., \$4,650. Ed, Ext. 4650 or 218-7609.

96 SATURN SC2 - 5-spd., a/c, p/s, p/b, 90K mi., looks and runs like new, dealer maint'd., \$3,500. William, 924-3641.

96 TOYOTA CELICA GT - convertible, white body, blk. top/int., excel. cond., new eng., dealer maint'd., a/t, a/c, all pwr., 75K mi. \$10,000. Mary, Ext. 6344 or 929-3388.

95 FORD MUSTANG - blue/green, a/t, p/w, p/l, 2-dr., spoiler, alarm, tint windows, dual-flow exhaust, 57K mi., mint cond., must see. \$5,750. Rosalie, 399-2925.

95 LINCOLN CONTINENTAL - all pwr., v.g. cond., 76K mi., \$4,200. John, 289-9727.

95 PLYMOUTH VOYAGER - white, a/t, a/c, p/s, p/b, c/c, remote start, 117K mi., \$2,300. Rich, Ext. 7013 or 698-5294.

94 FORD MUSTANG - V6, all power, 136K hwy. mi., well maint., very reliable, must see, metallic blue w/spoiler. \$3,500 neg. Tom, Ext. 5741 or 473-3760.

93 FORD PROBE GT - red, 5-spd., a/t, p/s, p/b, p/w, 105K mi., recent battery, brakes, tires, timing belt, tranny, exhaust. \$2,000. Tirre, Ext. 3288 or 281-0360.

92 INFINITI M30 - white, orig. owner, 108K mi., leather, moon roof, a/c, p/s, p/b, abs, pwr. seat, c/c, v.g. cond. \$3,500. Herb, 928-0297.

92 MERCURY - Grand Marquis LS, black, all pwr., loaded, 92K mi., \$3,000. Chris, Ext. 2326.

91 CHEVY LUMINA - blue, runs, hit in front, 159K mi. \$600. Doug, Ext. 4393.

89 CHEVY CORSICA - a/t, a/c, p/s, p/b, 38K mi., v.g. cond. \$1,895. Ed, 472-2750.

88 BUICK REGAL - 2-yr.-old rebuilt eng., 4 new tires, 90K mi., runs well, needs minor body work. \$600. Guo, Ext. 5343.

88 HONDA ELITE SCOOTER - red, a/t, good cond., new batt., rear tire & tube, 1,800 mi., ideal for teenager. \$750. Neville, Ext. 5346 or 874-2730.

87 VOLVO 760 - 182K mi., good cond. \$1,200. Raj, Ext. 2058.

(Classified ads are continued on page 3.)