

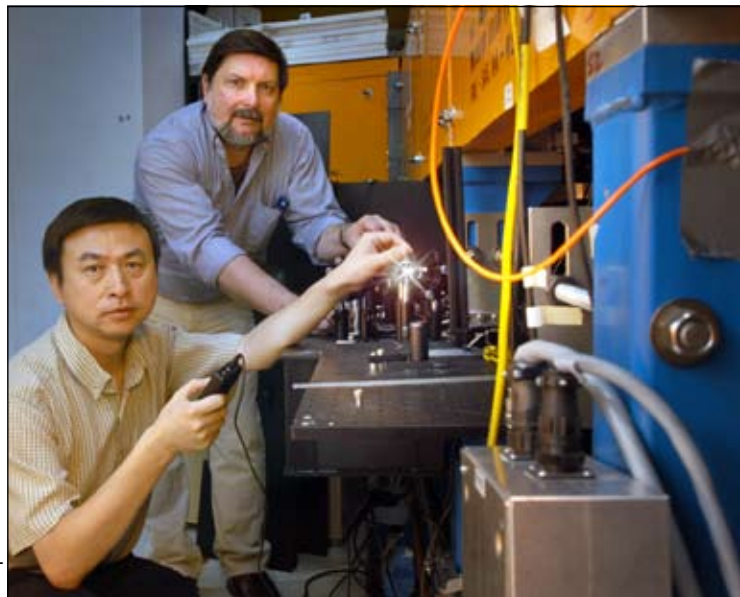
Researchers at BNL Produce Firsts With Bursts of Light

Team generates most energetic terahertz pulses yet, observes useful optical phenomena

Researchers at BNL have generated extremely short pulses of light that are the strongest of their type ever produced and could prove invaluable in probing the ultra-fast motion of atoms and electrons. The scientists also made the first observations of a phenomenon called cross-phase modulation with this high-intensity light — a characteristic that could be used in numerous new light source technologies.

The work, which was done at BNL's Source Development Laboratory, an offshoot of the Lab's National Synchrotron Light Source (NSLS), is described online in the July 23, 2007, edition of *Physical Review Letters*. This research was supported by the Office of Basic Energy Sciences within the U.S. Department of Energy's Office of Science, the Office of Naval Research, and BNL's Laboratory Directed R&D funds.

The light pulses used were in the terahertz (THz) range of the broad electromagnetic spectrum, found between the microwave and infrared range. Scientists send tight bunches of electrons at nearly the speed of light through a magnetic field to produce THz radiation at a trillion cycles per second — the terahertz



Lead author Yuzhen Shen (left) and NSLS researcher Larry Carr

frequency that gives the light its name and that makes it especially valuable for investigating biological molecules and imaging, ranging from tumor detection to homeland security.

The BNL team is looking to expand the potential uses for this type of light by increasing the strength of individual THz pulses, a longtime goal for scientists in the field. By slamming an electron beam from an accelerator into an aluminum mirror, the researchers produced

100 microjoule (100 megawatt) single-cycle pulses — the highest energy ever achieved to date with THz radiation. For comparison, 100 megawatts is about the output of a utility company's electrical generator.

The combination of this new-found strength with ultra-fast pulses provides researchers with a powerful new tool to study the movement of a material's electrons — which zip around at the femtosecond, or quadrillionth of a second, timescale; or atoms —



(Above) Authors, from left, Dario Arena, Xijie Wang, Yuzhen Shen, Larry Carr, Takahiro Watanabe, Boyzie Singh, James Murphy, and Thomas Tsang, at the Source Development Lab.

which move at the picosecond, or trillionth of a second, timescale.

"The goal is really to understand the properties of materials," said NSLS researcher Yuzhen Shen, the lead author of the paper. "One might ask what happens in a solid when light, electricity, or sound goes through it, and it's all related to atoms in a crystal wiggling around or the movement of electrons. So the effort surrounding ultra-fast pulses is going into making tools to probe the real fundamental properties of materials on the scales at which they move."

Using this strong light, researchers can "kick" molecular processes such as catalysis or electronic switching (important for developing data storage

media) into action and watch their mechanisms on a very short timescale.

The team also found something surprising: the intensity of their THz pulses is so great that they introduce so-called "nonlinear optical effects," specifically, a phenomenon known as cross-phase modulation.

"When you pull on a spring, if you pull twice as hard, it stretches twice as much," said NSLS researcher Larry Carr. "But there's a limit where if you pull twice as hard, the spring doesn't move anymore. That's when it's called nonlinear. The same thing happens in materials. You let these short pulses pass through a material, and

(continued on page 3)

'The Place is Here, The Time is Now' — Part II At Users' Workshop, CD-1 Announced for NSLS-II Project



More than 450 participants at the opening plenary session for the two-day workshop for users of the National Synchrotron Light Source II (NSLS-II) heard Pat Dehmer (below), Director of DOE's Office of Basic Energy Sciences (BES), announce that the planned successor to BNL's existing Light

Source will be located here. The news that the project had been awarded "Critical Decision One" (CD-1) in the five-step DOE approval process was greeted with sustained applause by the overflow audience in Berkner Hall.

While congratulating BNL on its achievement, Dehmer cautioned that there is much hard work ahead, and that nothing can be taken for granted. Urging the audience's "early and substantive involvement," she said: "There are opportunities that come to only a very few people in the right place at the right time. The place is here, the time is now."

Dehmer's talk and talks by John Marburger, Presidential Science Advisor and former BNL Director, Steve Dierker (below, left), Associate Laboratory Director for Light Sources and Project Director for NSLS-II, and Satoshi Ozaki, NSLS-II Associate Director for the Accelerator Systems Division were summarized in Part I of this article, in *The Bulletin* of August 3, 2007. The article continues below:

Planned Facilities

Marty Fallier, NSLS-II Associate Director for the Conventional Facilities Division,

described his vision for a "great environment to carry out research at NSLS-II," from the main entry lobby, which will serve as a venue for events and a gathering place for tours and other activities, to a loading area with rolling access to all beamlines, and Lab office buildings and service buildings that will be located along the inside and outside of the storage ring.

The project team expects that NSLS-II will achieve the Gold Standard for Leadership in Energy and Environmental Design (LEED) awarded by the United States Green Building Council. LEED is the nationally accepted benchmark for the design, construction, and operation of high-performance green buildings, offering tools for sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Issues key to the construction of NSLS-II are building stability, and vibration and temperature control, Fallier said, and additional studies are being conducted on vibrational and thermal stability, with another

technical review scheduled in September.

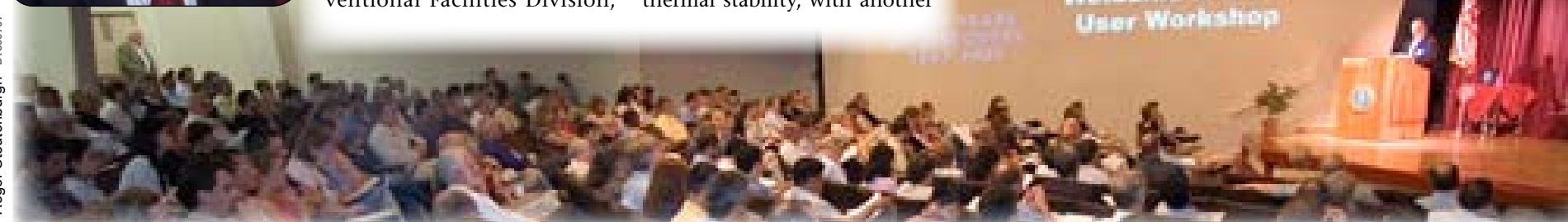
The conventional facilities will offer a layout enabling longer beamlines and future expansion for full beamline build-out. Fallier also promised a "reasonably quiet" experimental floor and convenient parking and access to labs, offices and beamlines. He said a covered walkway and possibly heated sidewalks might connect the NSLS-II with the Center for Functional Nanomaterials (CFN).

In discussing plans for the experimental facilities, "the embodiment of the scientific vision" for NSLS-II, John Hill, NSLS-II Associate Director for Experimental Facilities Division, described the conceptual design of an accelerator that "has matured into an exciting

design, promising superlative experimental capabilities." He detailed the range of radiation sources that will be available to match various scientific needs and many novel features of the design, including damping wigglers for hard x-rays, soft-bends for soft x-rays, and three-pole wigglers, also for hard x-rays, and "truly tiny" electron beams. The experimental floor will enable some long beamlines to have hutchches outside the experimental hall.

The project aims to provide a minimum suite of insertion device beamlines to meet physical science needs that both exploit the unique capabilities of the NSLS-II source and provide workhorse instruments for a large user capacity.

(continued on page 2)



Integrated Safety Management Awareness

Integrated Safety Management (ISM) is the framework used to help guide all work at BNL, and is a key requirement of BNL's contract with DOE. ISM's five core functions call for the Lab, as well as each employee, to define the scope of work; identify and analyze all hazards; develop and implement controls for those hazards; work within these controls; and provide feedback to improve safety in future work.

BNL will undergo a crucial ISM review later this month. The auditors will likely interview a wide cross-section of BNL employees. Below are the eighth in a series of general ISM questions for managers, supervisors, and staff. The text below the questions gives examples of processes that may be appropriate as references for understanding the Lab's ISM program.

Questions for Managers: *Are you responsible for the safety of your staff? How are those responsibilities communicated to you?*

Question for Staff: *Do you understand your responsibility regarding personal and co-worker safety?*

Response: Staff must know how work is planned and controlled for everyday work activities. Be actively involved in identification, planning, and improvement of work and work practices. BNL ES&H standards of performance and Roles, Responsibilities, Authorities & Accountabilities (R2A2s) establish that:

- Managers shall analyze hazards, authorize work and ensure that work is performed within established safety controls; and prevent pollution, minimize waste, conserve resources and minimize risks.

- Supervisors shall ensure that staff is competent, trained, and qualified for work and assign work accordingly; ensure that staff comply with Laboratory policies, standards, procedures and regulations. Supervisors also ensure mitigation of all identified hazards.

- Safety is a line responsibility for managers, but every worker is responsible for their own safety. Everyone has the right to Stop Work if they perceive imminent danger to a person, property or the environment. Stop Work procedures are available at <http://training.bnl.gov/>

- Staff shall display an individual attitude and responsibility for safety, accept responsibility for safe performance, have a questioning attitude by challenging assumptions, consider potential adverse consequences of planned actions and assist each other in preventing unsafe acts or behaviors.

For more information, contact Steve Coleman, Ext. 8705 or coleman@bnl.gov.

'The Time Is Now' — NSLS-II Users' Workshop



Roger Stoutenburg DS070707

Advanced Science for World-Leading Light Source

In the first afternoon session, Harvard University Professor of Chemistry Charles Lieber recommended taking a "bottom-up" approach to future exploration of nanoscience at synchrotrons. Just like biologists, who study how single pieces of DNA and protein group together to form cells, which, in turn, form an organism, Lieber insisted that nanoscientists also should think about their work as building blocks of increasing complexity — beginning with nanowires and nanoclusters, which make up devices and circuits, and together, can form various cutting-edge electronics, photonics, and biological technologies.

Using nanowires as an example, Lieber discussed different methods for characterizing nanomaterials and assembling them into integrated systems for possible applications such as quantum computing, nano-sized solar cells and power sources, and even an "artificial brain" that can read the input and output of electrical signals.

"These advances require the detailed characterization of structural and electronic prop-

erties on multiple-length scales and environments," he said. "And light sources will help drive this science and technology revolution."

Harvard University Medical School Professor Steve Harrison then discussed the next step in biomolecular research — "molecular movies" that link live cell dynamics and molecular structure. Advances in x-ray crystallography, a thoroughly practiced technique at the current NSLS, will help researchers achieve that goal, he said. In order to produce good data from very small and weakly diffracting crystals, researchers will need a very small, stable beam, along with precise sample-handling instruments, and large detectors with very small pixel sizes, Harrison said. "NSLS-II appears to be a great place to do this," he added.

Weighing the Options for User Access

Patrick Gallagher, Director of the National Institute for Standards & Technology Center for Neutron Research, discussed the pros and cons of common user access modes that might be considered for NSLS-II.

Emphasizing that there is

no perfect model, Gallagher first outlined the Participating Research Team (PRT) model, of which the NSLS is the "poster child." In this model, a team manages and funds beamline development and operation in exchange for up to 75 percent of dedicated beam time access for its team members. Although the PRT model is successful in encouraging innovative beamline design and scientific participation, Gallagher said, it also can lead to localized access, poor optimization of beamline development, and inadequate or inconsistent levels of operational funding.

Gallagher then highlighted the more recent General User Partner User (GU/PU) model, which is used by an increasing number of facilities, including the Advanced Photon Source at ANL, the Spallation Neutron Source at ORNL, and others. In the GU/PU model, partnership teams can make contributions to facility-operated beamlines in exchange for up to 20 percent of dedicated beam time access for its members. Gallagher pointed out that while this model allows for a strong facility role in developing and operating beamlines, better

optimization, enhanced levels of operational support, and a growing use of traditional proposal-based access, it could lead to less involvement from outside agencies and organizations, less industrial participation, and fewer design innovations.

Although PRT and GU/PU models are the two most prominent user-access models at the moment, Gallagher encouraged NSLS-II leaders to weigh their options and invent a system that would work best for their facility.

John Hill gave a second presentation on beamline development and user access, which will be through peer-reviewed proposals. Hill detailed how the NSLS-II beamlines will be developed with the user community though the beamline advisory teams and partner users. Partner users will be able to negotiate beam time to allocate to their members and can also apply for General User time on any beamline. He reiterated the project team's desire to learn from prospective users what capabilities they would like to see in the new facility.

Technique and Science-Based Breakout Sessions

On the workshop's second day, breakout sessions were held on techniques, including hard x-ray nanoprobe, soft coherent scattering and imaging, powder diffraction, macromolecular crystallography, liquid interfaces, inelastic x-ray scattering and photoemission spectroscopy. Science based-sessions were held in the areas of life sciences, catalysis, environmental science, high-pressure, strongly correlated electrons, magnetism, soft condensed matter, and radiometry and metrology. For summaries of a few of those sessions, see www.bnl.gov/nsls2/news/PRdisplay.asp?prID=N2-16.

— Kay Cordtz and Kendra Snyder

Then & Now — From Earliest Times, Planning for Users

As everyone who knows any BNL history is aware, the Lab was built for outside users. BNL's mission has always been to perform research with unique, large-scale tools and facilities that could be shared by scientists from BNL, universities, industry, and other laboratories.

The concern for users' needs, therefore, has always been a driving force at the Lab. Examples date from the earliest days when, in 1946, the design of the Brookhaven Graphite Research Reactor, known as the "pile," was being planned. The pile had to be built very quickly to fulfill users' needs before they went elsewhere, and so it was to be scaled up from an existing design of the second reactor ever built, the smaller X-10 at Oak Ridge National Laboratory.

Lyle Borst, head of the BNL pile project, came from the X-10. With his small, close-knit design team of reactor physicists, he used the X-10 as a model, but made many innovative improvements, both in design and in materials. Among them was a new way of inserting and withdrawing the reactor's control rods from two corners rather than from one face of the cube-shaped pile, so that as many faces as possible could be left free for more experimenters to use.

Another of Borst's major improvements was in cooling the reactor. By dividing the cube in half and leaving a small vertical gap, engineers could direct air to flow into the central, hottest part of the reactor to be sucked out through the fuel channels. This more efficient cooling made it safe to achieve a higher rate of neutron production, which in turn made possible a wider variety of experiments.

Coming back to the present, the Lab has retained its traditional role as a user facility. The High Flux Beam Reactor, the Alternating Gradient Synchrotron, the National Synchrotron Light Source, and the Relativistic Heavy Ion Collider are some of the major machines that have welcomed scientific researchers from around the nation and the world through the decades.

Now, the success of the recent "standing room only" National Synchrotron Light Source-II (NSLS-II) Users' Workshop (see story, page 1), demonstrates both the vital interest to users of the plans for the new facility that were discussed and their confidence that their contributions would be valued.

— Liz Seubert



The west face of the Brookhaven Graphite Research Reactor in 1962, showing some of the experimental installations. At this face, there were 30 separate holes through the shielding wall that could accommodate different experiments.

Note: These few details on the building of the BNL pile are taken from the fascinating book, *Making Physics*, by Robert P. Crease of Stony Brook University. Available at the BERA Store, the book tells the story of the people and science in the Lab's early history.

BERA Trip to Coney Island Tomorrow! Includes Brooklyn Cyclone Baseball Game

On Saturday, August 11, join BERA for a day at Coney Island; enjoy the ocean beach, amusement park, and aquarium, then see the ball game at 6 p.m. The \$20 per person fee includes the ball game ticket and the coach fare. Amusement park and aquarium admissions are separate. The bus will leave the Brookhaven Center at 11 a.m. and leave Coney Island at 9 p.m. (or at the end of the game). Advanced paid reservations are required. Buy your non-refundable ticket at the BERA Store on weekdays, 9 a.m.-3 p.m.

BERA Trips, Events

Below are a few of the trips, etc., available. To buy tickets and for more information, go to the BERA Store, or see www.bnl.gov/bera/.

Sat., 8/11 - Coney Island and baseball. \$20. See above.

August: Duck tickets are available. <http://www.liducks.com/>

Fri., 8/31 - 4 p.m. dep. Yankees vs. Tampa Bay - \$44

Sat., 9/8 - Tony Bennett at Radio City, 3:30 p.m. dep. for 8 p.m. show, \$60 pp includes bus

Sat., 9/8 - 7 a.m. dep. Army Football at West Point, \$45.

Sat., 9/15 - 7 a.m. dep. Shopping at Cabela's, PA. \$20.

Arrivals & Departures

— Arrivals —

Cristoforo Caccavale..... ITD
Gabriele Carcassi..... Physics
Daniel Chenet..... C-AD
Mark Doherty.....Chemistry
Leah Donley.....Info. Svcs.
Michael Gaffney.....S&H Svcs.
Carmine Guarino..... NSLS II
Tommy Hofmann..... CMP&MS
Thilak Kumara Kotte Jayathiklaka
Mudalige..... CFN
Ariane Kretlow..... NSLS
Michael Loftus..... NSLS II
Ying Lou.....Biology
Selamnesh Nida..... C-AD
Janet Schlock..... P&PM
Josh Tackentien.....NNS

— Departures —

Lance Cooley..... CMP&MS
Garry Crosson..... Env. Sci.
Kenya CrossonEn. Scis. & Tech.
Qian Wang.....Chemistry
Wei Xie..... Physics

Bursts of Light (cont'd)

they stress it and pull some of the charges apart so they don't act in a linear manner."

As a result, the researchers can manipulate both the ultra-fast THz pulses and the material they interact with. Some of the simplest examples include changing the color of the light or turning the material into a focusing lens.

This is the first time cross-phase modulation has been observed in single-cycle THz pulses. Learning how to control this characteristic could lead to even more light source technologies. — Kendra Snyder

Safety Glass Office Day Change

Effective August 1, the Safety Glass Office in Bldg. 211 is open on Wednesdays from 9 a.m. to noon and 1 to 4:30 p.m. This is a change from the past Friday hours of operation.

Please Donate School Supplies

School supplies for needy children are being collected at the BERA Store. Your gift will be much appreciated.

Fidelity Investment Counseling, 8/28

A Fidelity Investment representative will be at the Lab on Tuesday, August 28, to hold sessions with individual employees interested in learning more about their retirement-savings and investment options. Schedule one of the 30-minute appointments by calling (800) 642-7131.

TIAA-CREF Retirement Counseling, 8/14, 24

A TIAA-CREF consultant will visit BNL on Tuesday, August 14; and Friday, August 24; to answer employees' questions about financial matters. The consultant will help you: understand the importance of protecting your assets against inflation; find the right allocation mix; learn about TIAA-CREF retirement income flexibility; and compare lifetime income vs. cash withdrawal options. For an appointment, call Suzanne Leone, (866) 842-2053, ext. 4601.

Service Anniversaries

The following employees celebrated service anniversaries during April 2007.

— 40 Years —

Irene Rosati.....Bio.

— 30 Years —

Robert Malone..... Physics
Frederick Squires..... Plant Eng.
Kathleen Hygom..... HR&OM
Gary Schaum..... ESD
Hsiao-Chaun Hseuh..... C-AD
Dean McDonald..... C-AD
Bonnie McGahern.....NNS

— 25 Years —

Henry Ashby, Jr.C-AD

— 20 Years —

Harold Wiesmann..... CMP&MS
Kathleen Loverro..... NSLS
Jonathan Reich..... C-AD
John Hammond..... Physics
John Aloji, Jr.NSLS
Andrew Levine.....Rad. Con.
Richard Chorzempa..... Physics
Margareta Rehak.....Magnet
Victor Usack..... C-AD
Sean McCorkle.....Bio.
Darcy Mallon..... Dir's. Office
Reginald Redman..... Centr. Fab.

— 10 Years —

Magdalene Rando..... S&Sec
Alexei Lebedev..... Physics
Kathleen Gillen.....NNS
Vyacheslav Solovyov.....CMP&M
Anthony Mantone..... Plant Eng.
Margaret Lynch..... Dir's. Office
Christine Metz..... ITD
Richard Felter.....Magnet
Richard Michta..... NSLS
David Morrison..... Physics
Alan Weston..... C-AD

The following employees celebrated service anniversaries during May 2007.

— 40 Years —

Paul Sparrow..... C-AD

— 30 Years —

Etsuko Fujita.....Chemistry
Judith Thompson..... CFN
Roger McDonald..... ES&T

— 25 Years —

Stanley Hanlon..... Staff Services
Randolph Church..... NSLS
John Foley.....EMS

— 20 Years —

Joseph Tullo..... Plant Eng.
Michael Bebon..... Dir's. Office
Thomas Timko..... Plant Eng.
Edward O'Brien..... Physics
Neville Williams..... S&Sec

— 10 Years —

Subramanyam Swaminathan...Bio.
Alex Korol..... Plant Eng.

BNL's Summer Sundays Tour National Weather Service, 8/12

Open days for the public are well under way. Each week, through August 19, a different tour will be featured. Both adults and children can also enjoy a variety of entertaining activities, including the Whiz Bang Science Show and the Brain Teasers exhibit each week. Celebrate the Lab's sixtieth anniversary, and collect commemorative souvenirs while supplies last.

Summer Sundays are offered free, and no reservations are needed. Visitors may arrive any time from 10 a.m. to 3 p.m. The Whiz Bang Science Show will be staged at 10:30 a.m., noon, 1:30 p.m. and 3 p.m. each Sunday. All visitors age 16 and over must bring a photo ID.

August 12 - Learn About the National Weather Service

Are you prepared for the hurricane season? Learn about weather — what creates it, how it is tracked, and how to be ready for it — at the National Weather Service, located on the Laboratory site. A weather balloon will be launched for visitors to view at 3:30 p.m.

August 19 - A Perfect Liquid Exists at RHIC.

Defensive Driving in Two Parts, 8/23 & 30

The six-hour Defensive Driving (Point & Insurance Reduction) course will be held in two parts on consecutive Thursday nights: August 23 and 30 in the Brookhaven Center South Room, 6 p.m.-9:15 p.m. The course is open to BNL, BSA, and DOE employees, facility-users, and their families, at \$38 per person (note increase in price). Preregistration is required. To register, call Ed Sierra, 821-1013, and leave a message. Include your phone number. For more information, call Sarah Wiley, Ext. 4207.

Results From the Caption Challenge



The Bulletin of July 13 asked for captions for this photo of a chipping sparrow, taken by Lab photographer Roger Stoutenburgh. We had a vague idea of choosing the best, but we liked them all, so here they are, in no particular order. Thank you so much for giving us the fun of seeing the next one to arrive. All participants will get (eventually) a marvelously elegant 60th Anniversary ballpoint pen to write more captions for our next challenge.

"Don't Fence Me In"

Beatrice Pyatt, Medical
Joe Modjeska, retiree

"Please don't fence me in"

Frances Scheffel, retiree

"Unchained melody"

Nicholas Houvener,
Facilities & Operations
Barbara J. Moebes,
Physics Safety and Training Office
Alyce Daly, retiree

"Is the grass always greener on the other side?"

Chris Manning, Central
Fabrication Services

"They're right, the grass isn't always greener on the other side."

Wayne Rambo, National
Synchrotron Light Source (NSLS)

"Searching for the missing link."

Joe Modjeska, retiree

"Bird on a Wire"

(after the song or the movie)
Michelle Potocki, Safety &
Health Services Division

"The Bird Cage"

James Young, Upton Industries

"Finding Independence"

Sandeep Rekhi, NSLS

"The grass is greener, but there are still a lot of ticks."

Deborah Bauer, Environmental
& Waste Management Services

"Which way do I go? Which way do I go?"

Maureen Fazzio, Business Systems

"Narrow Sparrow"

Alfonso Borrelli, NSLS

"Fenced Freedom"

Alfonso Borrelli, NSLS

"A fence as a barrier? Think again !!"

Janakiram R. Naidu, retiree

"Where have all the people gone?"

Janakiram R. Naidu, retiree

"Nest for those just passing through"

Arthur Friedman, retiree

CALENDAR

— THIS WEEKEND —

Friday, 8/10

Art Exhibit

11:30 a.m.-1:30 p.m. Berkner Hall lobby. Stephen Babalola art exhibit.

*Dog Days Blues Festival

6 p.m. Brookhaven Center. Featuring Kerry Kearney Band led by guitarist, songwriter and singer Kearney, well-known at BNL; the 3AM Band, with classic songs from 60s to 90s; and the Jacks O'Diamonds Band, a trio performing original songs and those by Hendrix, B.B. King, and Stevie Ray Vaughn. Sponsored by the BNL Music Club and the Long Island Blues Society. Open to the public, tickets are \$10. Visitors to the Lab of 16 and over must carry a photo ID. See notice on page 4.

Saturday, 8/11

BERA Coney Island, Ballgame Trip

11 a.m. departure from BNL, spend day at beach, amusement park, etc., see Brooklyn Cyclone ballgame at 6 p.m. \$20 includes bus fare, ballgame. All welcome. See notice above, left.

— WEEK OF 8/13 —

Friday, 8/17

Visit BNL Science Learning Center

Noon-1:30 p.m. Science Learning Center, Bldg. 935, corner of E. Fifth Ave. and Railroad St. All Lab community invited to try interactive exhibits, visit the 3-D visualization theater. See why more than 25,000 elementary school children enjoy coming here each year. Some science-related toys for sale. An adult must accompany children under 14 years old.

Saturday, 8/18

*Mem Shannon & 'Bluzman' Blues

8 p.m. Berkner Hall. Mem Shannon and Sam "Bluzman" Taylor. Sponsored by the BNL Music Club and the Long Island Blues Society, the events are open to the public. Visitors to the Lab age 16 and over must bring a photo ID. Tickets are \$15. Buy at the BERA Store, at www.ticketweb.com or at the door of the show. Call 631-344-3846 for more information or see www.liblues.org. See page 4.

— WEEK OF 8/20 —

Thursday, 8/23

*Defensive Driving Course, Part I

6-9:15 p.m. First half of course, second part on 8/30. \$38. To register, call Ed Sierra, 821-1013, leave a message. See notice above, left.

— WEEK OF 8/27 —

Monday, 6/27

IBEW Meeting

6 p.m. Centereach Knights of Columbus Hall, 41 Horseblock Rd., Centereach. A meeting for shift workers will be held at 3 p.m. in the union office. The agenda includes regular business, committee reports, and the president's report.

Thursday, 8/30

*Defensive Driving Course, Part II

6-9:15 p.m. Second half of course. \$38. To register, call Ed Sierra, 821-1013, leave a message. See notice above, left.

Note: This calendar is updated continuously and will appear in the Bulletin whenever space permits. Submissions must be received by the preceding Friday at noon to appear in the following week's Bulletin. Enter information for each event in the order listed above (date, event name, description, and cost) and send it to bulletin@bnl.gov. Write "Bulletin Calendar" in the subject line.

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 benefits-eligible employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present benefits-eligible 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. Access current job openings on the World Wide Web at www.bnl.gov/HR/jobs/.

OPEN RECRUITMENT - Opportunities for Lab employees and outside candidates.

POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in condensed matter physics. In-depth knowledge and extensive hands-on experience in low-temperature physics and measurements techniques is desired, as well as a demonstrated talent and skills in design and building of custom research equipment with sophisticated electronics. Strong record of publications in leading research journals. Under the direction of I. Bozovic, Condensed Matter Physics and Materials Science Department. Send CV to felicia@bnl.gov, referring to Position No. FH 4595.

PROJECT ENGINEER I (P-9) - Requires a BS degree in mechanical engineering or equivalent and a minimum of 15 years relevant experience. Previous experience in a particle accelerator or a light source facility will be given preference. Comprehensive knowledge of engineering fundamentals, materials, manufacturing techniques, tolerances, and machine shop practices is required. Considerable skills in reviewing and updating design drawings using 3-D modeling software such as Autodesk's Inventor are essential. Extensive experience in working with the vendors and manufacturers of accelerator hardware is highly desirable. The candidate must have excellent interpersonal and communication skills. Essential responsibilities and functions include: review drawings and provide guidance to improve manufacturability, performance, cost and schedule; coordinate engineering specifications, statement of work, vendor selection, and quality assurance in support of contract manufacturing; act as a liaison between the engineering, manufacturing, QA and safety teams; perform on-site evaluation for manufacturing capacity and technical capabilities of the potential suppliers; develop inspection, test and measurement plans to ensure that cost, performance and schedule goals are met; prepare layouts for various laboratories for the fabrication, assembly and testing of accelerator hardware. Will report to the NLS-II Mechanical Engineering Group Leader, National Synchrotron Light Source-II. Send resume to petros@bnl.gov referring to Position No. PE 4750.

APPLICATIONS ENGINEER (I-6) - Requires a bachelor's degree in computer science, business information systems, or a related discipline and a minimum of four years' PeopleSoft programming experience of which three years must be at PeopleSoft version 8.0 or higher. Requires demonstrated proficiency in PeopleTools, PeopleCode, SQR development, PeopleSoft workflow; tree structure and report development. A minimum of three years' experience in developing and programming business applications such as Payroll, Human Resources, Accounts Payable, Purchasing or Inventory is required. Must have excellent working knowledge of business applications. Superior technical and analytical skills are required in addition to possessing excellent communication skills and the ability to work well in a team-oriented environment. Will be responsible for programming business applications and preparing all pertinent application design specifications. Business Services Division. Send resume to morales@bnl.gov referring to Position No. 3601.

SR. TECHNOLOGY ANALYST/LINUX ADMINISTRATOR (I-5, reposting) - Requires a bachelor's degree in engineering, computer science, or closely related field and at least one year of relevant experience. Prior experience with x86-based systems and kernel-level knowledge of RedHat Linux operating systems is required. Basic understanding of the I/O characteristics of Linux-based systems is desirable. Exposure to virtualization (vmware or xen) and open-source batch (condor, sge, pbs, etc) software is desirable. Basic knowledge of shell scripting, Perl/Python, C/C++, web-based languages and relational databases is desirable. Ability to work in a team-like environment is essential. Responsibilities include daily management of the RHIC ATLAS Computing Facility

(RACF) Linux Farm, addressing user community requests, carrying out hardware/software installation & upgrades and assisting in the evaluation of new technologies for the Linux Farm. Send resume to morales@bnl.gov referring to Position No. RM 4564.

MECHANICAL DESIGN ENGINEER (T-5, reposting) - Requires a BS degree in mechanical technology and design or equivalent experience, and a minimum of 10 years' experience with 3D modeling software and 20 years' experience overall with CAD software designing mechanical components and systems for fabrication. Experience with Pro-E wildfire and/or AutoCad inventor is also required. Must have the ability to perform mechanical design functions independently with general direction and review by a mechanical engineer or scientist. This includes knowledge of material properties, component choice, manufacturing/machine shop processes, and dimensioning and tolerances. Must be able to create accurate and detailed 3D system designs as well as mechanical manufacturing drawings to ANSI Y14.5 standards. Must be able to review and check the work efforts of other design personnel. Work experience with vacuum system components, high voltage/high current systems, RF systems, and cryogenics is highly desirable. With engineering support, will design and provide fabrication drawings for components used in particle accelerators such as magnets, power supplies, RF systems, vacuum chambers, and electronic diagnostics. Collider-Accelerator Department. Send resume to morales@bnl.gov referring to Position No. RM 4105.

ASSISTANT PROJECT PLANNING SPECIALIST (A-4) - BS degree in business, accounting, or a related field, or equivalent, is required. Must be able to work under pressure, balance priorities, and perform multiple tasks. Familiarity with Microsoft Project, Word, and Excel is required. Knowledge of Laboratory systems, such as WEB REQ, SBMS and PeopleSoft systems desirable. Must also be familiar with all aspects of procurement applying standard methods and procedures within Laboratory policies and regulations. Under supervision will interact with Project Leads and Operation Managers to ensure that activities are properly planned, executed and controlled in order to meet project requirements. Responsibilities include the monitoring of costs and commitments ensuring completion of activities within budget, financial reports, as well as gathering, analyzing, and organizing information into monthly and quarterly reports. Additional responsibilities include documenting project phases by preparing and maintaining Contract Summary spreadsheets, coordination of activities and interaction with various BNL departments, subcontractors, and other Lab personnel, proposal evaluation, drafting of statements-of-work and modifications, and technical contract administration, reviewing invoices for allowable and unallowable costs, and review, proper handling, and filing of Russian deliverables and reports. Potential exists for travel both domestic and international. Ability to obtain and maintain and DOE "Q" clearance. Nonproliferation & National Security Department. Send resume to morales@bnl.gov referring to Position No. 4230.

OFFICE SERVICES ASSISTANT (CW-2) - Requires an AAS degree or three years of equivalent experience, and knowledge of Excel, Word, and accounts payable processing. Working knowledge of personal computers and exposure to computerized business systems is necessary. Fiscal Services Division. Send resume to morales@bnl.gov referring to Position No. RM 4212.

Motor Vehicles

07 AMERICAN IRONHORSE SLAMMER - S&S 111, 6 spd, like new, 2,600 mi. \$21,000/neg. Mark, Ext. 2599.

05 CHEVROLET MALIBU - LS, pw, p/l, p/ seats, auto start, alarm, spoiler, mint, 33K mi. \$9,200/neg. 790-1592/846-3294.

04 HONDA PILOT - dark blue, gd. cond., 50K sm. dent on rear panel, some minor body scratches, \$17,950. Jon, Ext. 5335.

03 VW JETTA WAGON - silver, black int. 4cyl. 5spd m/t. ps/pw/pl/pb/vv/abs/ac/cd, side airbags, Monsoon sound. Firm. 56K mi. \$10,000. John, Ext. 5828.

98 FORD EXPEDITION XLT - 4WD, 5.4 liter, 3rd seat, leather, 6 CD, loaded, white/tan, excel cond, (KBB value \$8,500), 126K mi. \$6,800. Rich, Ext. 7294.

98 ACURA TL 3.2 - white, beige leather, s/ roof, v. clean. 96K mi. \$6,500. 891-9430.

97 SUZUKI SIDEKICK J1X - awd, 5 spd., gd. cond. 144K mi. \$2,850. 874-3515.

97 CHEVY BLAZER S10 - 4wd, 4 dr., new tires, brakes, injectors, windshield, white/gray. 170K mi. \$2,700. 516-356-2108.

96 FORD F-150 - 6cyl., a/t, new tires, batt. runs well. 141K mi. \$1,500/neg. Ext. 4044.

95 FORD WINDSTAR - 6cyl a/t dual a/c abs p/b p/s p/w p/l rf-rack tint glass am/fm/cass, orig owner. 101K mi. \$1,780/neg. Ext. 3294.

94 SATURN SPORTS COUPE - 4 cyl., a/t, dr. side airbag, 2dr., light green, just insp., runs well. 107K mi. 831-7697.

93 SAAB 900S - 4cyl., 4dr., a/t, am/fm cass., p/w, p/l, p/s, new tire, exh., orig. owner, gd. to fair cond. 140K mi. \$1,000/neg. Ext. 4947.

90 NISSAN MAXIMA - 6cyl, 4dr., a/c, a/t, runs well, gd tires. 150K mi. \$475. 921-4899.

87 CHEVY SUBURBAN - 4WD, 9 pass., a/ c, p/b, p/w, p/l, 5.7L, V8, TBI, runs well, records, manuals incl. \$1,200/neg. Ext. 2094.

85 COACHMAN CRUSADER CAMPER - 24', slps 6, br tub & shwr, m/wave, new hw htr, a/c, 2-20lb lp, batt., many extras. \$2,995/neg. Don, Ext. 7237 or 929-6571.

HONDA VTX - '05, 1500 Mi Saddlebags, w/ shield, extra chrome, \$7K. 924-0494 ext. 228.

LUGGAGE RACKS - fit Jeep Liberty like new, \$350/new, ask/\$175. 921-4899.

OEM TONNEAU COVER - for Toyota Tundra access cab., v. gd. cond., \$75. Ext. 5131.

ROOFTOP CARRIER - Sears Sport, 20 cu.ft., like new, \$95. 921-4899.

Boats & Marine Supplies

10' JOHN B - Alum., ask. \$350. 924-6751.

21' FOUR WINNS 205 SANTARA - 1984, Merc 470 I/O, full canv, mring cover, trailer avail., \$3,500/neg. Mark, Ext. 2599.

21' REGAL REGENCY - 1981 4cyl M/C I/O fr/water cooled eng. runs well, trailer cuddy cabin w/pottie. \$2,000/neg. 585-0655.

25' C&C 25 - Cruiser/racer, roller furling, spinnaker, new OB elec start, VHF, GPS, autopilot, slip \$10,000. Ext. 4575 or 987-4511.

WEST MARINE INFLATABLE - 8', 4 hp Evinrude 2 cyl/2stroke oars and engine stand, \$550. John, 821-4522.

Audio, Video & Computers

CAR STEREO - Durabrand, in dash, cd/MP3/cdrw, playback, MP3 disp, 45w x 4, slide down/det pnel w/rem, b/o. 434-5824.

CAR STEREO - Pioneer, 50w/chnl, cdrw/MP3/WMA playback, sat/ipod compat, blue OEL disp/scr/savr, \$160. Laura, Ext. 7842.

COMPUTER - Gateway, Pentium 4, tower case, needs new harddr., windows XP, 15" flat screen and keybrd. Ext. 7114.

COMPUTER - Dell L700cx w/15" Multisync mon., 700MHz, 128Mb ram, excel. cond., ask/\$70. Ext. 2897.

RECORDING STUDIO - Korg Digital, 32 track, model 3200, ask. \$800. 924-6751.

SUBWOOFER - Atlantic Technology subwoofers#pbm 70, 10" woofers 125 watt internal amp, pr/\$250. Edward, Ext. 7160.

TV - 65" Toshiba, HD Ready, model 65H84, \$1500. Tony, 258-5986.

Furnishings & Appliances

AIR CONDITIONER - wall, Samsung, \$70, Whiplow, older, \$50, both gd. working cond. & 7000 Btu/ea. Ext. 7496 or 828-8509.

BASSINETTE - white wicker w/mattress & eyelette skirt, ask/\$35. 286-1018.

BATH SET - new fabric shower curtain, rug, 2 sets towels, pale yellow w/flower appliques, b/o. Ext. 7114.

BEDROOM SET - queen formica, incl. hdbrd, 2 end tables, dresser w/mirror, black/grey, \$150/obo. Jerry, Ext. 2900.

BUREAU - 5 drws, 50s style, \$30; child's desk, pine, 3 drws, \$15, gd. cond. must pck up. Ext. 7647.

BUREAU - console, 9 drws, 19"x74", \$30; end table, 3 drws, 19"x34", \$25, both solid wd; bar style chair, \$5. Ext. 7647.

DINETTE SET - 42" dia., round table, 1" wood w/formica top, 4 chairs w/cushion, excel. cond., \$30. Ramon, Ext. 5086.

DINING RM SET - Pier I brushed alum. set w/glass top, 36"x60,"w/6 wicker chairs, full cushions, \$300. Michael, Ext. 7941.

DINING SET - round table, 42" dia., metal legs, formica top, 4 metal chairs w/cushion, excel. cond., \$50. Ramon, Ext. 5086.

ELECTRIC RANGE - Tappan, almond, gd. cond., \$75. Gilbert, 744-5553.

ENTERTAINMENT CENTER - oak, light bridge, holds 300 DVDs plus CDs & VHS, multiple shelves, will fit 65" TV. 258-5986.

ENTERTAINMENT CENTER - all wood, 22"x54"x 48"h, room for TV, stereo, videos, \$250. 345-0605.

FORMICA SET - queen, incl., headboard, 2 end tables, dresser w/mirror. black/grey. \$150/obo. Jerry, Ext. 2900.

KITCHEN/DINETTE SET - all wood, pedestal set, 42" round w/leaf, 4 chairs, excel. cond., \$250. Michael, Ext. 7941.

MIKASA CHINA - beautiful, white w/platinum edging, whole set or indiv pcs., prices/pics-email: mb@bnl.gov. Mary, Ext. 3670.

RECLINER - suede \$150; computer desk \$80; twin mattress \$50; foldable sofa \$100; love seat \$75. 828-6321.

ROCKER RECLINER CHAIR - \$175; computer desk \$75; twin mattress \$50; love seat \$75, used for 1 yr. Mamta, Ext. 3639.

TOASTER OVEN - broiler/rotisserie, Bravetti, like new, orig. \$125, ask., \$45. 744-8632.

WINE CABINET - antiqued steel & wood wine glass & bottle rack, over lower cabinet. e-mail for pics. \$100. 878-7655.

Miscellaneous

KEY LOCKER - for 30 keys, wall mountable ask/\$20. Ext. 5551 or 772-4751.

WINE GLASSES - Mikasa crystal, used 1 time, pic. avail., 6 glasses \$25 or \$6/pc., email mb@bnl.gov. Mary, Ext. 3670.

Free

DEHUMIDIFIER - Hampton Bay, working cond., 5 yrs. old. Eli, Ext. 7179.

Two Blues Concerts at BNL: Tonight, and 8/18 Dog Days Blues, 8/10

Two outstanding days of music are ahead: tonight, and on August 18 (see below). Tonight, Friday, August 10, is the Dog Days Blues Festival, with the Kerry Kearney Band, the 3 AM (3 American Men) Band, and the Jacks O'Diamonds Band performing from 6 p.m. in the Brookhaven Center (see also Calendar, page 3). Sponsored by the BNL Music Club and the Long Island Blues Society, the events are open to the public. Visitors to the Lab age 16 and over must bring a photo ID. Tickets for the August 10 show are



Kerry Kearney

\$10; for the August 18 show, \$15. Buy them at the BERA Store, weekdays, 9 a.m.-3 p.m., or at the door at the shows.

Mem Shannon & 'Bluzman' Taylor, 8/18

At the August 18 show, Mem Shannon, a former New Orleans cab driver who is now a guitar player, songwriter, and singer, will play jazz, funk, blues, soul, and R&R. Nominated for two 2006 Blues Music Awards, he uses sharp wit and social commentary in his vocals. He will be accompanied by his band, which consists of drums, bass, saxophone and keyboard.

Sam "Bluzman" Taylor's career in music spans more than 40 years. An inductee into the Blues Hall of Fame, Taylor is a multiple winner of national songwriting contests and author of the gold record by



Mem Shannon

BT Express, "(Do It) Until You're Satisfied." — Jane Koropsak

GARLIC CHIVE PLANTS - will dig up when you come to pick up. Steve, 404-8109.

KITTENS - for adoption, 10 wks., males, 1 blk/wh; 1 blk/wh stripe, litter box trained. 928-8112.

WELL DRIVER - call for details. 727-3608.

Sports, Hobbies & Pets

DOG CRATE - 48 x 30 x 36, unused, \$75/obo, raised 12" lg., dog bowls, new \$10. Ext. 7439.

FEMALE PUPS - AKC, German Shepherd, black/tan, georgous, show quality, a must see, excel. temper. 471-0306.

GLASS FISH AQUARIUM - new 20 gal. w/screen lid, Perfecto brand, double-sealed, \$20. Sue, Ext. 4931 or 929-2867.

KASTLE SNOW SKIS - 170 length w/bag and poles, Solomon quick-release bindings, b/o. Sue, Ext. 4931 or 929-2867.

POOL TABLE - excel. cond., paid/\$2,800, ask/\$750, wall rack, cover and all accessories incl. Ronald, Ext. 3411.

For Rent

CENTER MORICHES - wtrft., 3/4 bdrm. 2 bath, l/r, d/r, hwd. flrs., dn, new kit. & carpet up, new ss, appl., w/d, 50' blkhd, dead end, 2 car htd. gar/rec. rm. \$2,200/mo./neg. Ext. 5288.

EAST ISLIP - 1500 sq.ft., 2 bdrm., d/r, kit, l/r, bath, sep. gas and elect., heat/hot water incl., \$1,300/mo. 516-903-2013.

EAST PATCHOGUE - Like new, 3 bdrms, 2 baths, l/r, f/p, w/d, new carpet, cac, bsmt., 591-4257. \$2,200/mo. Ext. 3960.

HOLBROOK - large 1 bdrm bsmt apt., sep ent. full bath, plenty of closet space, no smkg/pets util. incl., avail. immed. 1 mo. sec. \$1,150/mo. 471-0306.

MANORVILLE - 4 bdrm. house, partially furn., fen., bsmt. \$1,500/mo. 681-9120.

MIDDLE ISLAND - 1 rm., kit., 2 bath, util., cost to share w/2 other students, 7 mi. to lab, for 1 person, \$500, for a couple \$800/mo./neg. 473-7496.

ROCKY POINT - 1 bdrm. apt., kit., l/r, bath, pvt. drway/ent., no smkg/pets, 1 mo. sec., util. incl. \$850/mo. 821-3287.

ROCKY POINT - 1 bdrm. apt. furn. or unfurn., patio, 2 lg. closets, quiet, 15 min. to Lab, \$1,000/mo., gas/wtr. incl., mrmgwu@yahoo.com \$1,000/mo./neg. 593-4561.

SHIRLEY - rm. for rent, micro kitnet., furn. full bath, sep ent., 5 min. to stores/beach, 15 min to Lab no smkg/pets, 1 mo. sec. tv, wireless int. incl. \$600/mo. Ext. 8321.

SHIRLEY - 3 bdrm., 1.5 bath, 2 car gar, screen rm., lr/dr/bsmt. \$1,750/mo. 909-3156.

SHOREHAM - lg. furn. 1 bdrm. apt., l/r, d/r, full kit & bath, a/c, util. incl., no smkg/pets, pvt.ent/drwy., single/couple only, 1 mo. sec., 5 min. to Lab. \$1,000/mo. Ext. 5263 or 375-7959.

SOUND BEACH - cozy 1 bdrm., 1 bath house, very priv., quiet, close to beach, 15 min. to Lab. \$1,050/mo. John, Ext. 4028.

YAPHANK - 2 bdrm. apt., l/r, eik, full bath, util. incl., close to BNL & county bldgs., no pets/smkg, 1 mo. sec. and ref. req. \$1,000/mo. Hank, 516-551-1901.

For Sale

BELLPORT - 4-BR. ranch, 2 bth, l/r w/dble opening fp to den, d/r, eik, oak flrs, screened deck on priv. yard, laundry rm, fin. bsmt: w/4th BR, bar, full bth, 2 rms; gar., 2 sheds, sprinklers, gt. cond. \$425,000; 949-7797.

BLUE POINT - Colonial, 5 bdrm. or mother/daughter, 2 bth, l/r, d/r, eik, 5 bsmt/crawl space, porch, 1.5 car gar., fenced yd., low taxes. \$449,000, Ext. 5025 or 286-1540.

BROOKHAVEN - 4 bdrm. cape, eik, full bsmt, 2 car gar, a/c, organic veg/flower garden, 15 min. to BNL. \$399,000. 286-2505.

BROOKHAVEN - single family home, l/r w/fp, eik, 2 bdrms., full bath, enclosed, gd. size sunrm, igp w/priv. bkdy., full bsmt., gar. \$419,000. 286-8338.

CENTER MORICHES - wtrft. 50 blkhd, 3/4 bdrm, 2 bath, l/r, d/r, eik, den/4th bdrm, part bsmt., w/d, 2 car htd. gar., new elec. serv. roof drs. windows carp. \$499,900. Ext. 5288 or 487-5717.

FARMINGVILLE - custom ranch, 2500 sf, 3 br, 2 bth, eik, l/r, d/r, den, wood flrs., 2.5 car gar, igs, igp, many upgrades, dead end st. \$519,900/neg. 516-906-3348.

MIDDLE ISLAND - 5 bdrm., 3.5 bath, l/r w/fp, d/r, 2 car gar, igp, laundry rm, full fin. bsmt., great location, shy 3/4 acre. \$459,000/neg. Elvin, 516-481-2680.

PATCHOGUE - Vlg., updated Victorian, 4 bdrm., eik, d/r, 1.5 bath, 2 car gar., all hw. flrs., pocket drs., on dead end, 73 Rose. \$379,000 758-0557 ext. 20.

SHOREHAM - 4 bdrm. cape, 2 bath, l/r, d/r, kit, full bsmt., oak flrs., 2 car gar, new siding, windows, drs., drway, walks, oil burner, landscape. \$389,000/neg. Ext. 7046.

Tools, House & Garden

BUBBLEJET BATH - Whirlpool, Home-medics brand, mat for tub, used 3 times, b/o. Ext. 7114.

CHAIN SAW - elect., like new, \$25. Joe, Ext. 3783 or 487-1479.

HEDGE TRIMMER - elec., excel. working cond., \$20. Joe, Ext. 3783 or 487-1479.

Wanted

ADOPT-A-PLATOON DONATIONS - Gatorade powder mixes needed, for more, see www.bnl.gov/bera/activities/va/PDF/AdoptAPlatoon.pdf. Ext. 5483.

DEHUMIDIFIER - for the bsmt., gd. cond. Mamta, Ext. 2176 or 828-6321.

LIGHTED TREE - help someone to fix lights on top half of lighted topiary patio tree, NOT a Christmas tree. Linda, Ext. 2733 or 395-6784.

NIGHT STANDS - in gd. cond. Ext. 5322.

TRAMPOLINE - need a trampoline in gd. cond. Mamta, Ext. 2176.

WHITE WOLVES - Indulge your inner geek. Join the Masquerade! Seeking 2-3 more players for wasted Sunday afternoons. Ian, Ext. 3393.

Service Ads

Available at <http://intranet.bnl.gov/ads/displayAdsAll.asp> on the intranet homepage on site. Or request from bulletin@bnl.gov or phone Liz Seubert, 344-2346.

OnTheWeb, the Bulletin is located at www.bnl.gov/bnlweb/pubaf/bulletin.html. A calendar listing scientific and technical seminars and lectures is found at www.bnl.gov/bnlweb/pubaf/calendar.html.

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Upton