the Bulletin

BROOKHAVEN NATIONAL LABORATORY

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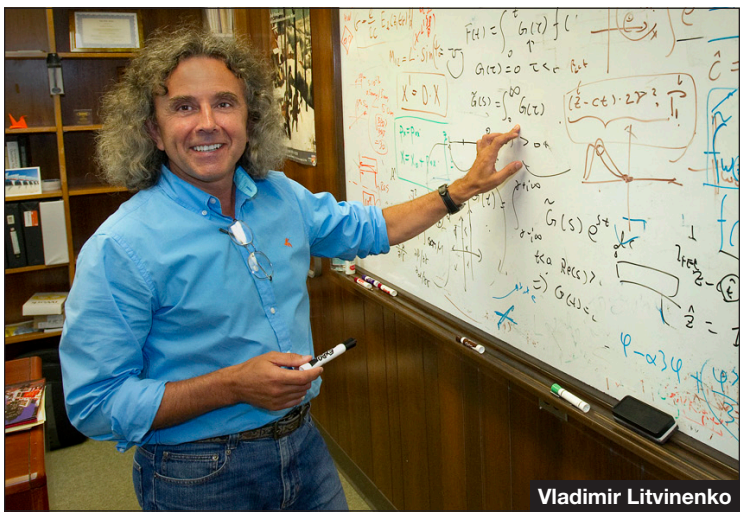
Coherent Electron Cooling

Combining Methods to Cool Particle Beams and Increase Collision Rates at RHIC

If you can crash more particles into each other at BNL's Relativistic Heavy Ion Collider (RHIC), you can collect more data from the subatomic wreckage. More data is just what researchers need in the hunt for answers to some of the universe's biggest mysteries as they investigate the "perfect" liquid quark gluon plasma (QGP) revealed by previous RHIC collisions and search for the origin of proton spin. These experiments help them understand what the universe was like moments after its creation and how it evolved to become what it is today.


Vladimir Litvinenko

Roger Stoutenburgh D2320611

To increase collision rates, or luminosity, at RHIC and generate more data, C-AD physicists — in collaboration with others from Jefferson National Laboratory, Tech-X Corporation, Budker Institute of Nuclear Physics in Russia, and Daresbury Laboratory in the United Kingdom — are developing a brand new technique called coherent electron cooling. Theory predicts that coherent electron cooling can increase luminosity by an impressive factor of 10.

Cooling Billions of Tiny Atomic Particles

The particle beams accelerated and smashed in colliders such as RHIC and the Large Hadron Collider in Europe are not made up of a continuous stream of particles. Instead, they are sent through these colliders' tunnels in groups known as bunches.

"The heavy ion beams we collide at RHIC have about 1 billion ions per bunch, and the proton beams have about 100 billion per bunch," said Vladimir Litvinenko, a C-AD physicist who is leading the charge for a coherent electron cooling system at RHIC. "In both cases, ion beams naturally expand, or 'warm up.' As that happens, ion bunches in the beams become less dense and luminosity decreases."

There are several ways to cool an ion beam. In the electron cooling method, a beam of "cold" electrons propagates with "warm" ions. Those electrons act as a thermal bath to extract heat and cool the ions — think of cooling a pot of hot soup by placing it in a sink filled with cold water. Another cooling technique, called stochastic cooling, uses measurements of an average ion's position to determine how much an electric field should "kick" the ions back toward their ideal positions. But these methods have limitations.

"The efficiency of electron cooling decreases as the beam's energy increases, so this method would take too long to cool beams in RHIC," Litvinenko explained. "Stochastic cooling, which we use at RHIC now, has worked very well to ramp up luminosity, but it cannot improve the beam density to the extent we need. Plus, it only works with the heavy ion beams that contain fewer, larger particles, not the polarized proton beams that contain larger quantities of much smaller particles."

So, Litvinenko is working with his collaborators to develop a hybrid of these two cooling methods — a coherent electron cooling system.

How It Works

A coherent electron cooling system for each of RHIC's two collision-bound ion beams would operate along approximately 200 feet of the 2.4-mile-round storage rings. Here's how it would work:

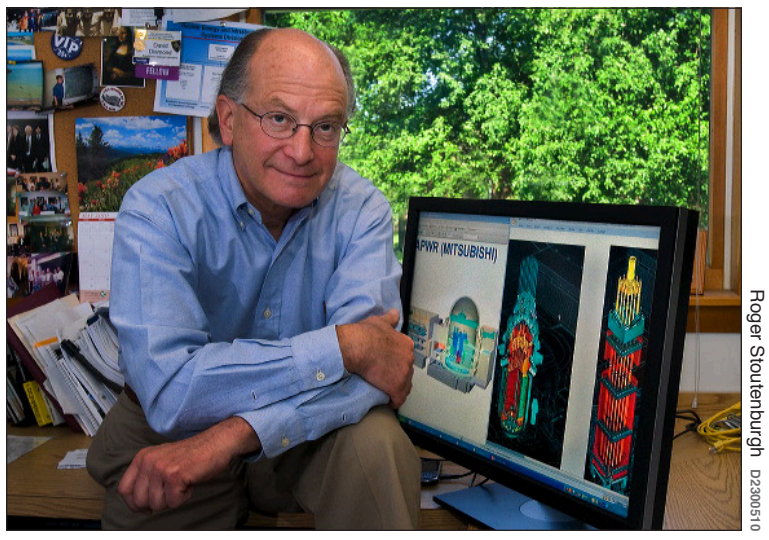
First, positively charged ions screaming along at nearly the speed of light pass through a modulator, where negatively charged electrons are added to the beam. The ions and…

*See **Coherent Cooling** on p. 3*

BGRR Milestone, 5/17

All are invited to join DOE Under Secretary Thomas P. D'Agostino in acknowledging the decommissioning of the Brookhaven Graphite Research Reactor (BGRR), on Thursday, May 17, on the west side of the BGRR, at 11 a.m. Please car pool; parking is limited.

See details on p. 3


Roger Stoutenburgh D2300510

BNL's David Diamond Gives Talk At Manhattan Institute Conference On Future of Nuclear Energy

Nuclear power continues to be a significant player in the energy marketplace but currently its growth is primarily overseas, according to David Diamond of BNL's Nuclear Science and Technology Department. That was Diamond's message at a recent conference at the Manhattan Institute for Policy Research, a conservative think tank. The conference, titled *Power 2012 — Keeping The Lights On: What Role for Coal and Nuclear?* was organized by Robert Bryce, a senior fellow at the Manhattan Institute and author of Power Hungry: The Myths of "Green" Energy and the Real Fuels of the Future.

The goal of the conference, which was open only to invited participants, was a freewheeling discussion of the roles that coal and nuclear will play in meeting growing global electricity demands, although natural gas also figured prominently in the discussions. The attendees included representatives from financial, technical, and media organizations. Diamond, the sole scientist among the speakers, made the case for the continued importance of nuclear in the global energy landscape.

"In spite of natural gas being more economical in many markets, in spite of the Fukushima catastrophe, in spite of the push for renewables, the nuclear energy sector continues to grow," Diamond said. "Yes, the growth is primarily in Asia and Eastern Europe but it is very important from a global perspective and if you focus on just the U.S., it is still significant."

While countries with an existing nuclear infrastructure — such as China, India, Russia, and Korea — are moving ahead rapidly, other countries like the U.S., France, Finland, the U.K., Ukraine and Brazil are moving ahead, but less rapidly, Diamond said. Many other countries like Vietnam, United Arab Emirates, Indonesia, Turkey and Poland are developing the necessary infrastructure to support nuclear-generated electricity. Only in a few countries — Germany, Switzerland, Italy, and of course, Japan — has the effect of Fukushima been sufficient to curtail plans for nuclear energy. In the U.S., there are 104 existing nuclear plants, 85 of which have either completed or are in the process of completing license renewal to allow them to operate for 20 years beyond their original 40-year license. Four new units are starting construction in Georgia and South Carolina and one older unit is being completed in Tennessee. Twelve other units are in the queue for licensing.

In addition, small modular reactors (SMRs) being developed in the U.S. are designed to be attractive to smaller markets — for example in isolated areas, developing countries, or in other special circumstances, Diamond said. Their innovative designs, factory construction, and smaller size leading to smaller capital outlay, give them the potential to be competitive economically with larger plants.

Diamond does not believe that the Fukushima disaster has caused any slowdown in the growth of…

*See **Diamond's Talk** on p. 2*

BWIS Talk, 5/17: '**Searching the Universe for Highly Energetic Cosmic Particles and Role Models**'

Petra Huetenmeyer of Michigan Technological University will give a talk titled "Searching the Universe for Highly Energetic Cosmic Particles and Role Models," on Thursday, May 17, at 4 p.m. in Berkner Hall. Sponsored by Brookhaven Women in Science and Brookhaven Science Associates (the company that manages the Lab) the talk is free and open to the public. All visitors to the Laboratory age 16 and over must bring a photo ID.


Petra Huetenmeyer

Cosmic rays, which are made up of subatomic and atomic particles ranging from electrons and protons to iron nuclei, bombard the Earth's atmosphere from space. They are produced and accelerated in the most violent environments of our known universe and can have energies that are orders of magnitude larger than the energies that will be produced by the Earth's most powerful accelerator, the Large Hadron Collider in Switzerland.

In the 1960s, scientists began considering supernova remnants — the gaseous remains of highly energetic explosions of massive stars (supernovae) — as likely candidates for cosmic ray particle accelerators in our galaxy, and the plot has thickened since. At higher energies, other classes of sources, such as gamma ray bursts, are still being considered.

Therefore, it is fair to say that even one hundred years after Austrian-American scientist Victor Hess first detected cosmic rays — winning the 1936 Nobel Prize in Physics for his discovery — we still do not know the exact nature of the physics processes that govern the way that cosmic rays are created and accelerated.

The study of gamma rays provides a crucial piece of the puzzle. Gamma rays are produced by cosmic ray interactions with matter and radiation fields in space, and as neutral particles, they can be traced back to the location of their creation. This will help with the identification of cosmic ray source classes, ultimately leading to uncovering their origin.

In her presentation at BNL, Huetenmeyer will discuss how the experiment she is currently working on at the High-Altitude Water Cherenkov Gamma-Ray Observatory (HAWC), located on the Sierra Negra plateau near Puebla in Mexico, will contribute to her quest, and how positive role models have influenced her approach to solving the day-to-day problems of astrophysicists working in large international collaborations. She has long been intrigued by the influence of role models on young scientists and engineers and their careers.

Huetenmeyer received her Ph.D. in elementary particle physics from the University of Hamburg in Germany while working on the OPAL Experiment at CERN. She then switched continents and fields and moved to the University of Utah where she worked on the HiRes experiment, an astrophysical observatory in the Utah desert that measured ultra-high energy cosmic rays.

*See **BWIS Talk** on p. 3*

***Diamond's Talk** from p. 1*

...the nuclear sector in this country.

"People support nuclear energy but the economics are just not there when you have cheap coal and natural gas," he said. "I was surprised to learn that we supply a growing portion of China's coal. From the middle of the U.S., it's cheap enough to get coal across the Pacific Ocean to China to make it worthwhile to the Chinese to buy our coal. And natural gas is now expanding into the electric generation sector."

Historically, BNL has provided safety and design analysis to the Nuclear Regulatory Commission (NRC). The anticipated SMRs will be sufficiently different from the existing plants that a new regulatory process will be necessary. Diamond said that when vendors are ready with their designs, Brookhaven will be prepared to review documentation and perform confirmatory analysis of the safety of those designs.

At the conference, the six presenters spoke for only five to seven minutes each while the balance of the time was spent in dialogue with an astute, well-informed audience.

"The conference was very well organized and I learned a great deal," Diamond said.

— Kay Cordtz

May Is Asian Pacific American Heritage Month

BERA's Asian Pacific American Association Issues Invitations:

APA Celebration, Triveni Rao Honored

Saturday, 5/12**:** 1–6 p.m., Charles B. Wang Center, Stony Brook University. Dance, music, and vocal performances from ten Asian countries, arts and crafts booths with multi-cultural displays, and workshops will all be part of this celebration of Asian Pacific American Heritage Month at the Wang Center. The event is co-sponsored by multiple local groups, including BNL, and hosted by the Suffolk County Office Asian American Advisory Board.

This year, Triveni Rao, a senior physicist in the Instrumentation Division, was nominated by the BNL APAA for an award, and the Suffolk County Executive will present her with a proclamation during the 4:30 p.m. theater performance. For more information, go to: *www.scaaab.org/2012_asian_pacific_american_heritage_month_celebration/about_the_festival*.

Vietnamese Recital

Friday, 5/18: Noon–1 p.m., Berkner Hall. All are invited for an hour of Vietnamese culture — including traditional dances by a student group, music on a Vietnamese string zither, a 16-stringed instrument which resembles a bamboo tube that has been sliced vertically in half; and a film on the beauty, culture and history of Vietnam.

China Showcase Event

Friday, May 25: 4:30–5:30 p.m., Berkner Hall. A program of music, dance, and oratory performances by professionals and local artists will be dedicated to the culture of China. All are invited to this free event, open to the public. Visitors to the Lab of 16 and older must carry identification with a photo (passport, driver's license). For upcoming APA Heritage month events, check *www.bnl.gov/bera/activities/apaa/*.

CONGRATULATIONS, 2012 BSA SCHOLARS

Brookhaven Science Associates (BSA), a company formed by a partnership between Battelle and Stony Brook University (SBU) to manage Brookhaven Lab, has announced the 15 winners of the annual BSA Scholarships, which go to children of BNL employees in continuation of a tradition instituted at BNL in 1965. Each BSA scholar is a high-school senior who will receive $2,500 per year for up to four years of study at the college or university of his or her choice. As an additional benefit, SBU, which is committed to bringing the SBU and BNL communities closer together, has offered a matching scholarship to BSA scholarship students who are admitted and enroll as full-time students at SBU in the fall of 2012. The 15 BSA scholars for this year are listed below.

1. Jared Angona, son of Ronald Angona of the Instrumentation Division, lives in Shirley and attends McGann Mercy High School in Riverhead. He will attend Stony Brook University this fall.

2. William Bland of Shoreham is the son of Leslie Bland who works in the Physics Department. A senior at Shoreham-Wading River High School, he plans to attend Bucknell University and major in global management and economics.

3. Matthew Boose lives in Patchogue and is a senior at Patchogue-Medford High School. The son of Steve Boose in the Physics Department, he will attend Binghamton University to study computer engineering for a career with computers and electronics.

4. Gabriele Escallier, daughter of John Escallier of the Superconducting Magnet Division, lives in Riverhead and attends Riverhead High School. She will complete coursework for the pre-medicine track at the University of Miami.

5. Samuel Hoff is a senior at Bellport High School and a resident of East Patchogue. He is the son of Lawrence Hoff of the Lab's Collider-Accelerator Department and will attend the University of California, Los Angeles.

6. Julia Huang, daughter of Haixin Huang from the Collider-Accelerator Department, lives in South Setauket and attends Ward Melville High School. She will attend the Trinity College of Arts and Sciences at Duke University.

7. Angeliki Ellie Laloudakis, a resident of Farmingdale who attends Farmingdale High School, is the daughter of Nikolaos Laloudakis of the Collider-Accelerator Department. She will study English at the State University of New York at Geneseo for a career in journalism.

8. Sonya Li, daughter of Qiang Li in the Condensed Matter Physics and Materials Science Department, lives in East Setauket and is a senior at Ward Melville High School. Working toward a career in biological and physical sciences, she will major in chemistry at Columbia University.

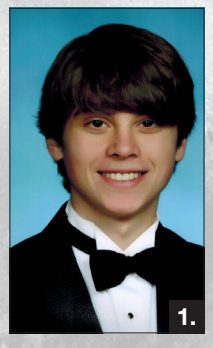
9. Vivienne Litzke lives in Smithtown and attends Hauppauge High School. She is the daughter of Wai-Lin Litzke in the Safety & Health Services Division and will attend McGill University in Canada.

10. Chirag Raparia, son of Deepak Raparia from the Collider Accelerator Department, is a resident of Shoreham and a senior at Shoreham-Wading River High School. He will attend Binghamton University to study anthropology for a career in medical research.

11. Anna Sato is a senior at Ward Melville High School and lives in East Setauket. She is the daughter of Yimei Zhu of the Condensed Matter Physics and Materials Science Department. She will attend Yale University or Princeton University and plans to study chemistry.

12. Janna Shaftan, a resident of Miller Place and daughter of Timur Shaftan of the Photon Sciences Directorate, is a senior at Miller Place High School. She will attend Northeastern University and plans to study physics and chemical engineering for a career in engineering.

13. David Wu, whose father is Lijun Wu of the Condensed Matter Physics and Materials Science Department, lives in Port Jefferson Station and will graduate from Comsewogue High School. He will study computer science at Dartmouth College.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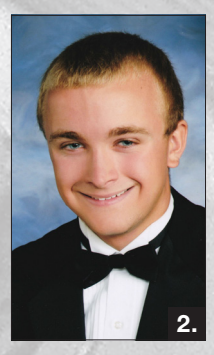
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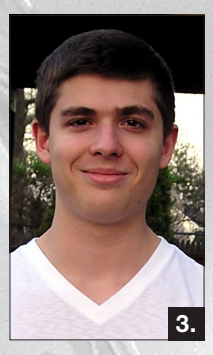
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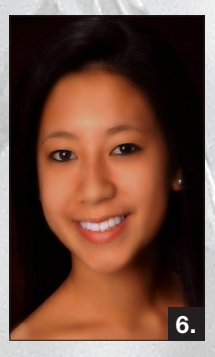
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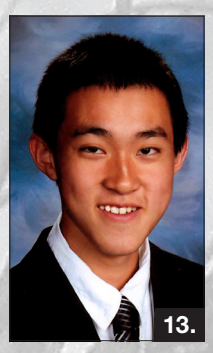
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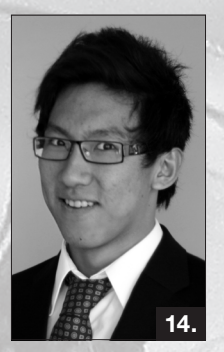
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14. Jonathan Yin, who lives in South Setauket, is a senior at Ward Melville High School and the son of Zhijian Yin of the Photon Sciences Directorate. He will study economics and mathematics at Williams College.

15. Scott Zhang, son of Yian-biao Zhang in the Biology Department, lives in Middle Island and is a senior at Longwood Senior High School. He will attend the University of North Carolina at Chapel Hill.

Roger Stoutenburgh D5160311

Coherent Cooling from p. 1

…electrons have opposite charges so they attract each other. This causes the electrons to form small clouds that envelop the ions and these small clusters of ions now encased in electron clouds then propagate within the beam.

Next, magnets separate the oppositely charged particles and direct them into two bypasses. The electron bypass contains a free electron laser with a "wiggler," which has a series of magnets that create a periodically alternating magnetic field. The free electron laser adds more electrons to the neatly organized electron clouds to amplify the clouds' negative charge. Meanwhile, the ions in the ion bypass maintain their pace and energy levels as they continue racing along.

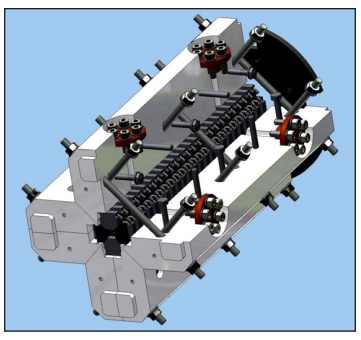
Then, the ions and electrons merge back together and the electron clouds, now with an amplified electric field, act as a "kicker." As the electron clouds attract the positively charged ions, their electric field pulls the slower ions to accelerate and the faster ions to decelerate. Thus, the beam condenses, or "cools," to form a tighter, denser pack.

After that, the electrons are stripped and dumped while the cooler ions in tighter formations race on for a cataclysmic tango with an oncoming ion beam containing similarly cooled particles.

The Steps Ahead

"Right now, the theory and tools to simulate coherent electron cooling are progressing and we expect the first start-to-end simulation package to be complete this year," Litvinenko said.

After that, the next step is to demonstrate that coherent electron cooling really does work.



The free electron laser portion of the proposed coherent electron cooling system, which will amplify the electron clouds' negatively charged electric field. When the electrons again join with collision-bound ions, the amplified electric field will pull the slower ions to accelerate and the faster ions to decelerate. Thus, the beam condenses, or "cools," to form a tighter, denser pack.

Litvinenko and his collaborators are proceeding to build a coherent electron cooler prototype capable of cooling gold ions at an energy of 40 billion electron volts (GeV). Actual experiments should start in 2015 and continue for two years.

If the experiment is successful and the funds are available, a full-size coherent electron cooler could be built in approximately two to three years.

In addition to increasing luminosity and physics productivity at RHIC, such a cooling system would also help make the case for building an electron-ion collider (EIC) at RHIC. This proposed facility, known as eRHIC, would require very high luminosity for collisions between electrons and heavy ions so physicists can probe even further into the mysteries of protons, heavy ions, and the forces that affect them. This cooling technique could also be implemented to increase luminosity at the Large Hadron Collider.

— Joe Gettler

Joint NSLS/CFN Users' Meeting, 5/21-23

The National Synchrotron Light Source (NSLS) and Center for Functional Nanomaterials (CFN) 2012 Joint Users' Meeting, to be held May 21-23, provides a venue for scientists from diverse disciplines who use the NSLS and CFN facilities to share their work and discuss future directions for their research. New results and advances in experimental capabilities in synchrotron radiation and the nanoscale science research will be highlighted.

This year's theme, "Expanding the Toolbox for 21st Century Science," will showcase the vital roles served by DOE's NSLS, NSLS-II, and CFN, with an emphasis on new tools that have been developed recently for current facilities and planning for the upcoming transition to NSLS-II. The program includes updates from DOE's Basic Energy Sciences and BNL management, invited talks, workshops, a poster session, and exhibits that showcase new technology and instrumentation. Plenary sessions will be held Monday and Tuesday mornings, with workshops in the afternoons.

Keynote Speaker: Gina Kolata, *The New York Times*

The keynote ppeaker on Monday, May 21, will be Gina Kolata, bestselling author and award-winning senior writer for science and medicine for *The New York Times*. She has traveled the country lecturing at universities and medical schools, demystifying scientific and personal health issues for the general public and passing on her considerable knowledge of science writing and communication.

Special Session: Transition from NSLS to NSLS-II

In the afternoon of Monday, May 21, a discussion will be held on planning for the transition from NSLS to NSLS-II. User feedback will be critical for moving forward on this issue. All NSLS (and prospective NSLS-II) users are strongly encouraged to plan on attending this session.

Plenary Sessions Free, Open to Public

Monday and Tuesday morning plenary sessions, as well as the Monday afternoon transition discussion, are open to the public and free of charge. For more information on the meeting, go to *http://usersmeeting.ps.bnl.gov/default.aspx?year=2012*.

BWIS Talk from p. 1

Before joining Michigan Technological University as an assistant professor in 2009, Heutenmeyer was a post doc at Los Alamos National Laboratory where she focused her research on the detection of galactic gamma rays with the Milagro Observatory that was located in the Jemez Mountains, about an hour drive from LANL. Most recently, she has been involved in the design and construction of the HAWC Observatory, the successor of Milagro to be completed in 2014.

— Jane Koropsak

New Vytra ID Cards for BSA Participants

Employees who are currently enrolled in the Vytra medical plan will be receiving new ID cards in the next several weeks. Vytra is replacing ID cards with an updated version for all BSA participants. Your new ID cards may come in an envelope with an Emblem Health logo, and your cards should also include an Emblem Health logo. This does not affect your coverage under the Vytra plan. When you receive your card, please confirm that all information is correct (i.e., name, member number, co-payment information) and that you have received a replacement card for each member on your coverage. Please replace your former card with the new card. You will not be receiving new Cigna prescription drug ID cards, so please continue to use the CIGNA card you have. If you have any questions please contact the Benefits Office Ext. 5126 or Ext. 2877.

Reminder From the Benefits Office:

Select BSA Benefit Plans Are Now Managed By P&A Group, Including Plans for Retirees

By Denise DiMeglio, Manager, Benefits Office

Brookhaven Science Associates (BSA), the company that operates and manages Brookhaven Lab, announced in December 2011 that it had hired a benefits administration company — the P&A Group — to manage benefit plans for retirees, participants receiving long-term disability, and the family members who are covered by these plans. The P&A Group has been responsible for mailing bills and collecting payments since January 1, 2012.

Monthly premium payments for the people participating in our P&A-administered plans are due on the first day of the month, but payments will be accepted without consequence until the 30th. Be sure to pay your monthly premium before the 30th of each month to avoid your benefits coverage being cancelled.

Those who prefer to have monthly payments withdrawn automatically from a bank account, rather than mailing a check each month, can set up automatic clearinghouse (ACH) payments. A computer is not necessary to request an ACH form or get payment information. Instead, you can call the P&A Group at (800) 688-2611 and then select option 2, followed by option 1. They can mail you an ACH form, which you would complete and mail back to them.

If you prefer to cancel your BSA benefits, please call the Benefits Office at (631) 344-2877 or (631) 344-5126.

BNL's New 'Portal to Discovery' Offers Hands-on Summer Science Explorations for Students

Three-day mini-camps for grades 4-6, week-long camps for grades 7-9

The "Portal to Discovery," a new partnership between BNL's Office of Educational Programs and the Long Island Matrix of Science and Technology, is hosting a variety of hands-on science summer camps for students entering grades 4-12.

The three-day mini-camps at the Science Learning Center have been reserved for children/grandchildren of BNL employees at no cost. Students must be entering grades 4-6 for the "Astronomy and the Sun" camp. BNL employees can choose from sessions on July 10-12 and August 6-8. Times are 8:30-11:30 a.m. Additional sections of this mini-camp will be offered to the public for a nominal fee.

To register for the Science Learning Center mini-camp for BNL employees, contact the Science Learning Center office, Bldg. 400, Ext. 4495.

Two separate week-long programs are also being offered for students entering grades 7-9. These fee-based camps are available to the public as well as the BNL community. One course will explore alternative energy sources while the second course will examine cutting-edge engineering. Program times are 9 a.m.-2 p.m.

Formerly known as the Community Summer Science Program, these Summer Science Explorations for students entering grades 10-12 provide seven different program choices for high school students. The fee-based, week-long workshops include physics fundamentals, calculus fundamentals, mathematical modeling, modern physics, integrating modern physics, solving protein structures at the Synchrotron, exploring Long Island's diverse ecosystems, and marine archaeology using underwater remote operated vehicles (ROVs). Program times are 9 a.m.-4 p.m.

For more information call (631) 344-4495 or visit: *www.bnl.gov/education/program.asp?q=173*.

Calendar

Today, 5/11

***Plant Sale for AdoptaPlatoon**

11 a.m.-1 p.m. Berkner Hall parking lot. Bldg. 400 if it rains. Buy plants to benefit troops abroad.

Saturday, 5/12

Asian Pacific American Heritage Celebration at SBU

1-6 p.m. Wang Center. See details on p.2.

— WEEK OF 5/14 —

Thursday, 5/17

***BGRR Milestone**

11 a.m. West side of the Brookhaven Graphite Research Reactor (BGRR). Join DOE Under Secretary Thomas P. D'Agostino in acknowledging the decommissioning of the BGRR. Please walk or car-pool, parking is limited. See p.1.

Talk: Searching for Cosmic Particles

4 p.m. Berkner Hall. Brookhaven Women in Science sponsors Petra Huetenmeyer of Michigan Technological University to talk on "Searching the Universe for Highly Energetic Cosmic Particles and Role Models." All are welcome to this free event, open to the public. Visitors to the Lab of 16 and older must carry photo ID. See p.1.

Friday, 5/18

***Vietnamese Recital**

Noon. Berkner Hall. See p.2.

***'Webinar' on Quitting Smoking**

1-2 p.m. At your computer. "Are You Prepared to Quit Smoking?" Register at *nlosinno@bnl.gov,* see *www.bnl.gov/HR/*

— WEEK OF 5/21 —

Monday, 5/21

***Joint NSLS/CFN Users' Meeting**

All day. Berkner Hall. Plenary session, special session, all welcome. See left.

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.

Tuesday, 5/22

***Joint NSLS/CFN Users' Meeting**

Berkner Hall. Morning plenary session. All welcome. See left.

Thursday, 5/24

Brookhaven Lecture

4 p.m. Berkner Hall. Dario Arena, Photon Sciences Directorate, will talk on a topic to be announced. All are welcome to this free lecture, open to the public. Visitors to the Lab of 16 and older must carry photo ID. NOTE: Thursday: unusual day.

Arrivals & Departures

— Arrivals —

Konstantine Kaznatcheev ..... Photon Scis
Hyung-Jin Kim ..... Physics
Gabriel Lopez .....ITD
Frank Mancini ..... En & Utils

— Departures —

Ryan Larkin ..... C-AD

Join the Veggie Club!

Join the 'Green Thumb' community-supported agriculture (CSA) group to get fresh produce from an organic farm in Water Mill, where the Halsey family grows 350 varieties of fruits and vegetables. For 26 weeks — June 7 to November 20 — freshly picked seasonal produce will be delivered weekly to BNL for you to pick up. The fee is $420, due at sign-up, by May 18. For more information, brochures are in the BERA Store in Berkner Hall, or contact Ruth Comas, *comas@bnl.gov* or Ext. 3545.

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/*.

To apply for a position, go to *www.bnl.gov*. Select "Job Opportunities," then "Search Job List."

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

INSULATION WORKER (TERM APPOINTMENT) – Under general supervision, performs installation and removal of insulation and protective coverings about piping, ductwork, fixtures, and devices as required. Performs limited removal, cleanup and disposal of asbestos insulation in accordance with applicable environmental control standards pursuant to laws and regulations governing BNL. Will be trained and must be certified as asbestos abatement worker to standards as adopted for such work by NY State. Site Resources Division Please apply to Job ID #16090 (REPOSTING)

RIGGER POSITIONS (TERM APPOINTMENT) - Requires a high school diploma with courses in advanced mathematics. Requires a CDL "A" license with Hazmat and Tank endorsements, with a minimum of ten years' documented rigging experience. Must have knowledge of rigging tools, their capacities and their limitations, in every lifting operation from routine to complex, and the ability to assess and implement proper rigging techniques used while moving or transporting an object of substantial weight or fragile composition. Responsible for the relocation of heavy machinery/equipment by attaching rigging to move, lift and/or hoist with cranes and/or forklifts; controlling movement of heavy equipment through narrow openings or confined spaces, using chain falls, pallet jacks, vault jacks, air mats or other equipment; dismantling, inspecting and storing rigging equipment after use. Expected to signal or verbally direct workers engaged in hoisting and moving loads, in order to ensure safety of workers and materials; use hand signals and other means to direct crane operators and help guide the objects into place; and tilt and turn suspended loads to maneuver over, under or around obstacles, using multi-point suspension techniques. Please apply to Job # 16105.

Motor Vehicles & Supplies

08 JEEP GRAND CHEROKEE LAREDO – 40K mi. green, V6, excel cond, maint at dealer incl 30K service, orig owner, avail mid-June. $18,500 neg. 995-0816, 10a-7p.

05 JEEP WRANGLER – 85K mi. a/c, c/c, 6 spd manual trany, hardtop, running boards, tow pkg, warr gd through May 2013. $12,500 neg. Sue, Ext. 5711.

04 SUBARU FORESTER 2.5 XS – 63.000 mi. 4/cyl, 25 mi per gal, v/clean car, new tires, green/silver. $12,000 neg. 903-9469.

04 COUPE HONDA ACCORD – 140K mi. gd cond, 4 cyl, manual transm, p/w, p/s, c/c, 2dr, am/fm, blck, s/roof, rear spoiler. $5,200 neg. Kunal, Ext. 2043, shroffk@bnl.gov.

03 HARLEY DAVIDSON SPORTSTER 1200 CUSTOM – 2.579K mi. 100th anniversary model, black/silver, pics avail. $5,500 neg. Dohyun Kim, Ext. 4393.

02 FORD EXPLORER XLT – 150K mi. 4wd, well maintd, new tires, leather, third row seating, runs well. $5,500 neg. George, Ext. 4549 or goode@bnl.gov.

99 MERCURY SABLE – 6-cyl, all options, new tires, needs nothing, mechanic owned, view at on-site garage, 90-day guarantee. $2,500. Ext. 4034.

87 CHEVROLET CORVETTE – 48K mi. convertible, blk, a/t, orig mi. $10,500 neg. Colleen, 347-218-1939, cmichael@bnl.gov.

84 CLASSIC CORVETTE – 13K mi. mint cond, 4/spd manual, red, stored in gar on lift. $15,000 neg. Ext. 3555.

83 HONDA GL650 SILVERWING INTERSTATE – 54K mi. gd cond, runs well, new wind shield/radio/mp3 player/batt,extras. $1,100 neg. Ext. 2253, 821-3320.

68 CHEVY CAMARO – 500 mi. Cherry red w/white racing stripes RS/SS a/t, p/b, 500 mi on rebuilt eng, show cond, call for pix/info. $29,000 neg. John, 291-3426.

OEM 2004 HONDA CRV RADIO – AM-FM, 6 disc CD changer & cassette radio for 2004 Honda CRV. $50. Bill, Ext. 2377.

TIRES – 4 Jeep Wrangler Stock Tires and Rims; 255/70/17R, great cond, less then 20K mi used, $450/neg. 516-655-6876.

TRAILER FOR SALE – 5 yrs old, flatbed, 10'x 5' util, ask/$400, orig price,$1000. George, georgewei@bnl.gov.

Boats

26' MACGREGOR 2002 – 26X w/trailer. One owner, new in Aug. 2002. Mast raising syst. 50 HP 4-strke Suzuki outboard w/low hours. $13,500 neg. Michelle, Ext. 3317.

Furnishings & Appliances

APT SIZE REFRIG & STOVE – Whirlpool Estate Stove 20" Mdl TEP222VAP Black/$350; Magic Chef Refrig, 4 cu ft Mdl # MCBR415S Stainless look/$150. Ext. 4919.

FREE FURNITURE – dining set w/6chairs, lg hutch + 2/leaves, great cond pic avail. Gene, 312-3495 or gvis@bnl.gov.

MOVING – Whirlpool drier, Haier washer, mattrsses K & Qu, bed frme, desk, dressr, toastr, baby stuff, kitchenware, more; price, pics http://tinyurl.com/7ffo3jf. 995-0816 10am-7pm.

Audio, Video & Computers

CANON 40D CAMERA KIT – DSLR kit, camera/lens/etc, super low shutter cnts, <4k,kit lens 28-135mm IS, w/HOYA HMC UV, protectr, 12G Sandisk card/$750. 995-0816 10a-7p.

KICKER AMP & SUB – brand new in boxes: Kicker ZX700.5 w/ remote level control & 10DC122, 2 12" Subs in enclosure, $600/all. Mark, Ext. 3970 or mwahlert@bnl.gov.

Sports, Hobbies & Pets

CHIHUAHUA – 7 months old, tan @ white, loves kids and other dogs, shots and papers, $400. Brenda, 428-3026.

CIRCLEGLIDE EXERCISER – Tony Little Pro Total Body Exercise Syst w/CD, Pd/$99.95, b/o, u-pic-up, assembld, pic, markstaller@bnl.gov. Melinda, Ext. 2280.

DIAMONDBACK VIPER – '99 BMX bike, like new cond, used maybe 10/times, $75. Mark, Ext. 3970, mwahlert@bnl.gov.

GOLF TRAVEL BAG – "Flight Master " Hard case Golf travel bag. $30. Bill, Ext. 2377 or bills@bnl.gov.

GOLFPAK STAND BAG – new, black w/ shoulder straps $35, listed at $49.99. Mary, 929-3388 or phraner@bnl.gov.

LADY ANTEBELLUM TICKETS – Four tickets to Comcast Theater, Hartford CT on 5/18, seats are under the roof in section 600 cntr stage, will sell in prs, $75/ea. 872-8966.

NIKE SHOES – Women's Nike Shox R4 Running Shoes black, new, sz 7, $60; Women's Nike Court Air Force, Hi Top white & blue, new, sz 7, $60. Raluca, Ext. 3235.

SHAVINGS FOR STALLS – sold in bulk, approx 60lbs per bag, $6/per bag. 516-818-4295.

STALLS FOR RENT IN RIDGE – full board, outdo ring w/lights, plenty of trails, individual turnouts, TLC for your horse, mins from Lab, $525. Wayne, 516-818-4295.

SURFBOARD – Roxy, 7.5', light blue w/ pink details, cushion, non-slip surface, leash incl, excel cond, $400. 219-7196.

TRAIL-A-BIKE – for pulling a child behind an adult bike $50. John, Ext. 8206.

TREADMILL – Nordic Track C-1900 treadmill, 17"w tread, new in '04, like new cond, ask/$200/obo. Glenn, Ext. 7320, 603-9205.

TUBE AMP/CLASSIC 30 – Peavey Tube Amp, 2 channels, reverb, effects Loop, great amp from Blues to Rock, made in USA, $375. Rich, Ext. 8186 or restro@bnl.gov.

WILSON PROFILE GOLF SET – gently used 12-pc, rt-hand player, $200; titanium driver, fairway wood, graphite shafts, 2 hybrids, irons w/steel shafts 5-PW, more. 929-3388.

Tools, House & Garden

PLANTS – white daisies, black-eyed susans, yellow lemon drops, $3/pot. Sabine, Ext. 4340 or skessler@bnl.gov.

Miscellaneous

BABY WALKER – Baby walker/$20.Excellent condition. Photo available upon request. mah_070@hotmail.com.

BETSY JOHNSON WOMAN'S WALLET – Ivory and fluorescent yellow/green, valued at $98, ask/$30. 921-1413.

BIRD CAGE – $5; GE window a/c unit, 120v, about 12K Btu, gd cond/$60; GE m/wave, 13.5"d, 12"h, 16"l inside dimens, gd cond/$50; 751-7250.

FRANKLIN MINT PRINCESS DIANA – 16" vinyl collectors doll, displayed for a short time, excel cond, orig box, photo on request, ask/$75. Judy, Ext. 4538.

Community Involvement

CRAFT FAIR & FLEA MARKET – Vendors Wanted - Craft Fair/Flea Market at The Big Duck. 9a-4p, Sat., 5/19, rain date 5/20, 10x10' spot $50. Info: 727-0593 or visit bigduck.org. Ext. 8962.

Happenings

DINNER/SHOW OUTING – to see Jonah at Sight n Sound Theatre in PA on Sat, Oct 13, 2012. Deposits by May 30, call for details. Kim, Ext. 2896, 399-3098 or khayes@bnl.gov.

DRIVE ONE 4UR SCHOOL – Miller Place HS, June 2, 2012, 10am-4pm, support MP Friends of the Arts, test drive a new Ford, Ford donates $20 for ea car driven, for flyer contact. Ext. 7918 or difilip@bnl.gov.

KARA'S HOPE 5K RUN/WALK – Kara's Hope Foundation is hosting our 2nd Annual 5K at Southaven Park on Sat May 19, visit www.karashopefoundation.org for event info and to register. Jeff, Ext. 5587 or jwilliams@bnl.gov.

MATH/SCIENCE CAMP — Quinipet Camp & Retreat Cntr, www.quinipet.org/, Shelter I., for children ages 11-14, Aug/25-31. $800 (sibling discounts avail.) Registration: http://sigmacamp.com/registration/. Contact: 371-3271, info@sigmacamp.com.

THE KING AND I – opens 5/17 at North Fork Community Theatre in Mattituck. Runs Thurs, Fri, Sat at 8PM and Sundays at 2:30 thru June 3. Tickets $20 at www.nfct.com. Laura, Ext. 2520.

Free

HITACHI PROJECTION COLOR TV – Fixable pwr supply problem, incls Service Manual, w/troubleshooting section & parts list, NO delivery, pick-up only. Ext. 7237, 929-6571.

PLANTS – Honeysuckle vine, chives. 404-8109.

TAPES (VHS) - NOT COPIES – Burger King Kids Club Teenage Mutant Ninja Turtles -Sky Turtle, M:i-2 Summer2000,Tim Burton's Nightmare Before Christmas, Multiplicity, The Fifth Element, Flipper, More, including Disney tapes. Michelle, Ext. 4905.

TV – 24" tubed CRT Sharp flr model 751-7250.

Many people need the food you donate through the BNL Food Drive. Please don't forget to bring some cans of food. Collection bins are in most buildings, including in Bldg. 400, the Mail Room Bldg. 179, and in Berkner Hall.

It Pays to Investigate Ridesharing at BNL

The price per gallon of regular gas on Long Island is about $4, so drivers may be inspired to consider ridesharing. Jeff Williams, a project engineer in the Lab's Environmental Protection Division, administers the BNL rideshare program, which he said has reached a new level of interest after new promotions announced during Earth Week.

Through June, the 511NYRideshare Carpool Challenge is being offered by MetroPool, a state-sponsored commuter incentive. People who carpool to and from work four or more times in one month can receive a $25 Dunkin Donuts gift card. A bigger prize, Williams said, comes over time, when ridesharing commuters add up the cost savings in fuel as well as 'wear and tear' on their cars.

Signing up for the Lab's rideshare program is easy — just go to *www.bnl.gov/rideshare/*. Once you've signed up, the registration for the Carpool Challenge takes just a minute, starting with a form, which must be returned to *jwilliams@bnl.gov*.

If ridesharers cannot meet their partners in time at the end of the day, the Guaranteed Ride Program provides a ride at no cost (*www.bnl.gov/rideshare/rideservice.asp*).

For more information, contact Williams at Ext. 5587 or *jwilliams@bnl.gov*.

Safety makes science possible at Brookhaven National Laboratory

http://intranet.bnl.gov/safety

Alex Reben V0010512

Eugene Santiago Remedies Electrical Concerns Labwide

Chief Electrical Inspector Eugene Santiago helps make Brookhaven Lab safe every day by identifying and mitigating electrical hazards. With expert help from the Lab's electricians, Santiago is methodically investigating the Lab's infrastructure and remedying any problems, making the workplace safe for employees and equipment. Learn more about Santiago's work in the video at *http://intranet.bnl.gov/safety/videos/index.php*.

Safety Day 2012, 6/6

BNL Children's Poster Contest

Entries must be postmarked by 5/21

The Safety Day Children's Poster contest is for BNL employees' children and grandchildren between the ages of 4 and 14. All poster contest entrants and their families are invited to attend the BNL Safety Day on Wednesday, June 6, at Berkner Hall. Posters will be displayed along with all other Safety Day 2012 activities.

Entries must be postmarked by May 21. All entries become the property of BNL once submitted.

Read the contest rules and download an entry form online: *http://bit.ly/IGipa0*.

Wanted

BINGO CARDS – need shutter-type Bingo cards for donation or reasonable cost for local civic assoc. Any other Bingo equipment welcome. Lois, 375-7264.

DECK CLEANER/HANDYMAN – Need person to clean Trex deck that can't be powerwashed. 6 miles from Lab. Have cleaner & sprayer. Other misc. work around house. 395-6784 or ldipierro2@optonline.net.

GARDEN TOOLS – in gd cond, rakes, shovel, clippers, trowel, etc. Ext. 2198, 909-7080 or lysik@bnl.gov.

MAGIC CARDS – The Gathering playing cards, for my two sons. Lawrence, Ext. 4797 or lvogt@bnl.gov.

POP TOPS FROM SODA/BEER CANS – Collecting for Shriner's Children's Hospital. Please send or drop off @ Bldg 400A, Transportation Office. Paula, Ext. 2535.

ROOMMATE – Looking for roommate to share a 2/3 bdrm apt close to BNL starting in July. yixyang@bnl.gov.

STORAGE SHELF UNITS – new, used or in servicable cond, pref. metal, I can pick up. Richard, Ext. 7443 or porqueddu@bnl.gov.

Lost & Found

CAR KEY – lost on Sunday, 04/29, 1/key w/remote control, probably at Berkner Hall or Chemistry Dept, bldg 555, many thanks. Rui, Ext. 4343, 443-319-3002.

For Rent or Sale

WEEKI WACHEE, FL – priv ranch on Gulf, 70m Orlando, 45m Tampa, fly Islip direct, near beach/tennis/park, SW architecture, 3/bdrm, 2/bath, d/r, f/p, 2gar, igp in lanai, fruit trees, see review.oktane.net/HouseTour. $450/wk. Sale:$120,000 neg. 344-5537.

For Rent

CANCUN, MX – Five Star Royal Resorts, Dec 1-8, Villa sleeps 6/$1,100, suite/$800 or 1 bdrm lockoff/$600. 352-509-4265.

BELLPORT VILLAGE – 1 bdrm grnd flr apt, 2-fam home; newly renov, wd flrs, prvt ent & drwy, encl porch, use of yd, village amen, 12 mi to Lab, util incl. $1,350/mo. 275-0745.

MANORVILLE – 1 bdrm duplex hse, eik, entry foyer, light and airy, new appliances, w/d, located on priv horse farm, pets ok. $1,200/mo. 516-375-1373.

MASTIC – 1 bdrm bsmt apt, kitch combo bath & bdrm, sept ent/drwy, no pets/smkg, 1 mo rent/sec, avail May 1st. $1,000/mo. 657-6237 or mingoia@bnl.gov.

MIDDLE ISLAND – newly renov, 900sq ft upper condo, 1/br 1/bath, 10 min to BNL, heat/water incl, new applis, full w/d, 1/mo sec dep $1200, lease ends 5/1/2013. $1,200/mo. Tim, 813-5097.

MILLER PLACE – 3 bdrm bsmt apt, own a/c unit & thermostat, walk in closet, big pantry plus utl, apt will be splitting the cost of heating the hse, avail 7/1/12. $1,350/mo. Elaine, 917-716-8706.

RIDGE – 1 bdrm l/r, kitchenette, mins to Lab, sep prkg/ent, incls all, no pets/smkg in apt. $975/mo. Lynne, 924-0002.

RIVERHEAD – 3bdrm, 2 full ba, Western Ranch, kit, dw, l/r, d/r, gar, new windows & furnace, quiet, lg prpty on c-d-sac, nr shops, no smkg/pets, refs & cc reqd, 1/mo sec+util. $2,250/mo. 512-6470.

ROCKY POINT – small studio Apt. Above grd. pvt entr. Great for 1 pers. Eat in kitch, full ba w/shower, lg closet, util & cable incl. No pets or smoking. 1st mo. rent and one mo. sec. $750/mo. 561-7587.

ROCKY POINT – 3 bdrm hse, 2 bath, fenced yd, pet OK, great location, no smkg, avail July 1st + utils & 1 mo sec. $1,800/mo. 278-5353 or winwin0306@aol.com.

SHOREHAM – Share house w/professional. Large furn bdrm, cable TV, intnet, no smkg/pets, 8 miles to BNL, avail now. 631-464-8134. $650/mo. gg19582003@gmail.com.

WADING RIVER – Spacious new 1 bdrm apt, part furn, quiet area, cable, int, util incl, no smkg/pets. $950/mo. 838-5879.

For Sale

EAST SETAUKET – 3 Bdrm, 2.5 Bath Condo, Cac. Eik. Lvingrm W/Gas Fpl. 9 ft Ceiling. Built 2003. Pond View. Three Village SD. $410,000 neg. 331-0311 or goldbear8@yahoo.com.

MIDDLE ISLAND – 4 bdrm ranch, 2 ba, eik, f/p, cac, pool, deck, fin bsmt, 2 car, sprinklers, shed, 600sq ft shop. $279,900 neg. Frank, Ext. 4620 or drfrank1953@gmail.com.

PORT JEFF STATION – lg upper 1 bdrm, 1 bath Co-op, eik, new appls/windows, a/c, d/w, lndry/pool on site, pet friendly. $98,000. Megan, 828-2743.

SAYVILLE – Sayville Co-op: upstairs unit, 1 br, 1 reno'd bath, lge l/r, d/r, kitch, bike to downtown/ Fl Ferries. Tons of storage. $99,000 neg. Robert, 750-6082.

In Appreciation

To my BNL family: The outpouring of your love & support following the passing of my dear husband Bob has helped me through the most difficult days of my life. I thank each and every one of you from the bottom of my heart. I am blessed to work with such caring, wonderful people.

— Theresa DiLello

WAY TO GO – Congratulations to Scott the plumber for finally being made permanent after two long years!!! We wish you many years of happiness at BNL!!!

— Your friends @ Q.C. Ext. 2950.

the Bulletin

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Roger Stoutenburgh, photographer

On the Web, the Bulletin is located at *www.bnl.gov/bnlweb/pubaf/bulletin.asp*. A calendar listing scientific and technical seminars and lectures is found at *www.bnl.gov/bnlweb/pubaf/calendar.asp*.

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