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BROOKHAVEN NATIONAL LABORATORY

Physics Today Highlights BNL's Award Winners

The "We Hear That" section of the March 2000 issue of Physics Today *read like a "Who's Who at BNL," noting five BNLers who were receiving prestigious awards.*

• First mentioned was BNL retiree Ray Davis, who shared the 2000 Wolf Prize in Physics with Masatoshi Koshiba "for their pioneering observations of astronomical phenomena by detection of neutrinos," (see Brookhaven Bulletin, February 4, 2000).

• Next up were retirees James Powell and Gordon Danby, for receiving the Franklin Institute's Benjamin Franklin Medal in Engineering for their 1968 invention "of a novel repulsive magnetically levitated train system using superconducting magnets. . . ," (see Brookhaven Bulletin, April 28, 2000).

• Then came BNL's Michael Creutz, for the Aneesur Rahman Prize for Computational Physics from the American Physical Society (APS) (see right).

• Finally, BNL's Mei Bai was noted for The Outstanding Doctoral Thesis Research in Beam Physics Award from the APS (see below). — Karen McNulty

Michael Creutz Wins Aneesur Rahman Prize

Roger Stoutenburgh

Using Monte Carlo techniques . . ., Creutz provided strong evidence that quarks cannot be isolated, thus mathematically confirming QCD.

Michael Creutz, Physics Department, was named the recipient of the 2000 Aneesur Rahman Prize for Computational Physics by the American Physical Society (APS). He received the $5,000 prize at a ceremony at the annual APS meeting in Long Beach, California, on May 1.

Creutz won the prize for "first demonstrating that properties of quantum chromodynamics (QCD) could be computed numerically on the lattice through Monte Carlo methods, and for numerous contributions to the field thereafter."

First proposed in the 1970s, QCD is the theory that describes the interactions of subnuclear particles. It is based on subconstituents called quarks. In 1974, Nobel laureate Kenneth Wilson of Cornell University proposed using a lattice in a regular geometric arrangement of discrete points of space and time to simplify making the advanced calculations required for QCD. Monte Carlo techniques derive their name from the random numbers used in this computational method to explore the vast space of possible values for the fields binding quarks. Such studies of QCD are now a major activity of the theoretical physics community and require the most powerful computers available.

> *Creutz's published findings in* Physical Review *became the most cited paper of 1980.*

Using Monte Carlo techniques on the lattice, Creutz provided strong evidence that quarks are particles that cannot be isolated, thus mathematically confirming QCD, which had already been tested experimentally. Creutz found that the force between widely separated quarks did not decrease, even as the quarks are moved farther and farther apart.

"The force between two quarks as you pull them apart is equal to 14 tons," Creutz said. "My investigations showed that a quark is a real object, but it can't be observed by itself."

In 1980, Creutz's findings were reported in the journal *Physical Review*, and his published paper became the most cited one of the year. Since then,

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BNL Proposes New Cyclotron

Early in April, BNL submitted a conceptual design report to DOE for a new cyclotron facility dedicated to year-round radioisotope research and production. On April 14, DOE's William Magwood spent a full day with BNL and DOE-BHG staff getting briefed on the construction and the operation of the proposed cyclotron.

Magwood is Director of DOE's Office of Nuclear Energy, Science and Technology (NE), which would support the project if it is funded. He was accompanied by Owen Lowe and Tom O'Connor of NE's Office of Isotope Programs.

According to Suresh Srivastava, Head of the Radionuclide & Radiopharmaceutical Research Division in BNL's Medical Department, the new facility would satisfy a critical national need by producing radioisotopes for medical and research applications.

Radioisotopes are at the heart of nuclear medicine, which offers safe diagnosis and/or treatment of a number of serious, life-threatening diseases, including cancer.

> *"Developing new, clinically useful radioisotopes and radiopharmaceuticals is the single most important contributor to the progress and growth of the field of nuclear medicine."* — *Suresh Srivastava.*

"Developing new and clinically useful radioisotopes and radiophar

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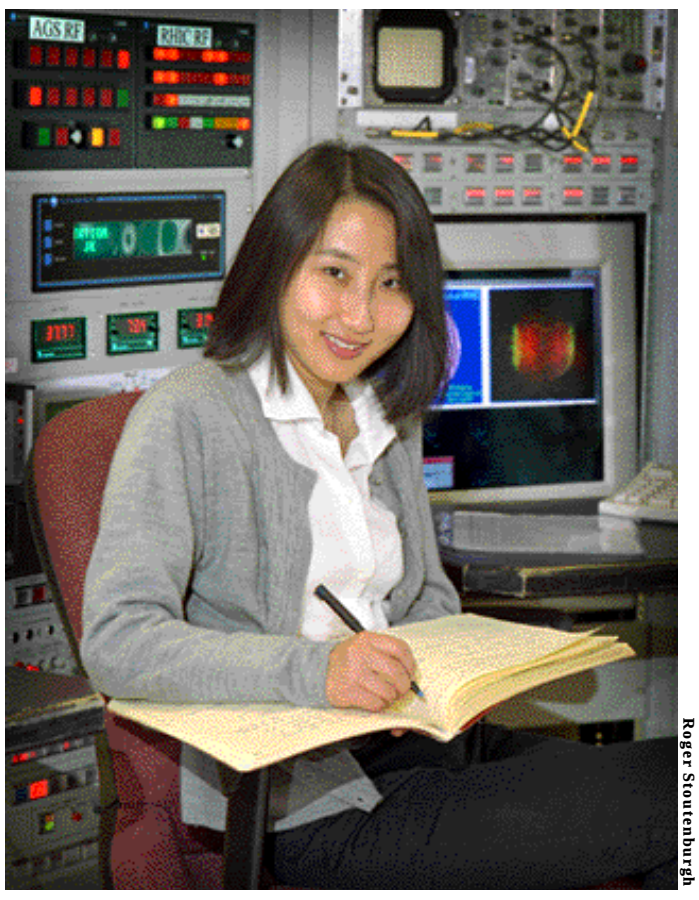
Mei Bai Spins Thesis Into Prize



Roger Stoutenburgh

Mei Bai, a research associate in BNL's Collider-Accelerator Department, has won The Outstanding Doctoral Thesis Research in Beam Physics Award from the American Physical Society. The award recognizes her "work in the theory, experimental demonstration, and clear explanation of a method using an RF dipole for overcoming intrinsic spin resonances in polarized proton acceleration."

One of the big challenges in polarized proton experiments is to accelerate the beam while keeping the spin of all the protons aligned in the same direction, or polarized. But as the protons orbit around the accelerator, they oscillate naturally, both horizontally and vertically. Because of these oscillations, the proton spin gets "kicks," or pushes, from the magnetic field that focuses the beam —"like a child being pushed on a swing at the pace of the swing's natural frequency," says Bai. These kicks add up, and eventually, the protons' spin alignment is destroyed.

"You can't get rid of the magnetic field," says Bai. "An accelerator is one big magnetic field — that's the way it works." But scientists have been working on ways to compensate for the magnets' effects.

Bai's method, surprisingly, uses another type of magnet, an RF (radio-

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Coming Up

Brookhaven Lecture

In Berkner Hall at 4 p.m. on Wednesday, May 17, Robert McGraw, Environmental Sciences Department, will give the 354th Brookhaven Lecture, "Aerosol Dynamics: A New Approach to Representing Aerosols in Complex Models." All are invited.

BSA Distinguished Lecture

On Thursday, May 18, at 4 p.m. in Berkner Hall, Carl Djerassi, inventor of the birth control pill, will give a BSA Distinguished Lecture on "Technology and Human Reproduction: 1950-2050." After the talk, the lecturer will provide a free copy of one of his books to each attendee and will be available to autograph the books. All are invited.

Cyclotron *(cont'd)*

maceuticals is the single most important contributor to the progress and growth of the field of nuclear medicine," Srivastava said. (See box below for some of BNL's "firsts" in this field.)

At present, the U.S. does not have a dedicated high-energy, high-current radioisotope production facility.

The proposed cyclotron would fulfill this national need and also serve as a national user facility for radioisotope production research. It would accelerate protons at energies of up to 70 million electron volts with a total beam current of up to 2 milliamps to produce an uninterrupted supply of radioisotopes to support research as well as multi-center clinical trials. Up to four beamlines are proposed for simultaneous multiple users and for potential outside commercial use.

James Mills, Collider Accelerator Department (C-A), led the team that prepared the conceptual design report for the proposed facility, which is named the Cyclotron Isotope Research Center. If the project is funded, C-A will oversee the 3.5-year construction phase. The Medical Department will manage and operate the center.

— Mona S. Rowe

BNL Firsts in Radioisotope R&D

Radioisotopes are used in the diagnosis and treatment of various diseases. This is a short list of developments at BNL.

- **Technetium-99m generator**, used in 85 percent of all diagnostic nuclear medicine procedures worldwide (about 20 million per year)
- **Instant kit for labeling red blood cells** with technetium-99m
- **Fluorine-18 fluorodeoxyglucose,** the world's most widely used agent for imaging brain function with positron emission tomography (PET)
- **Tin-117m DTPA**, the most promising agent for treatment of bone pain and bone metastases in cancer patients.

Equipment Demos

Morrell Instrument, May 8

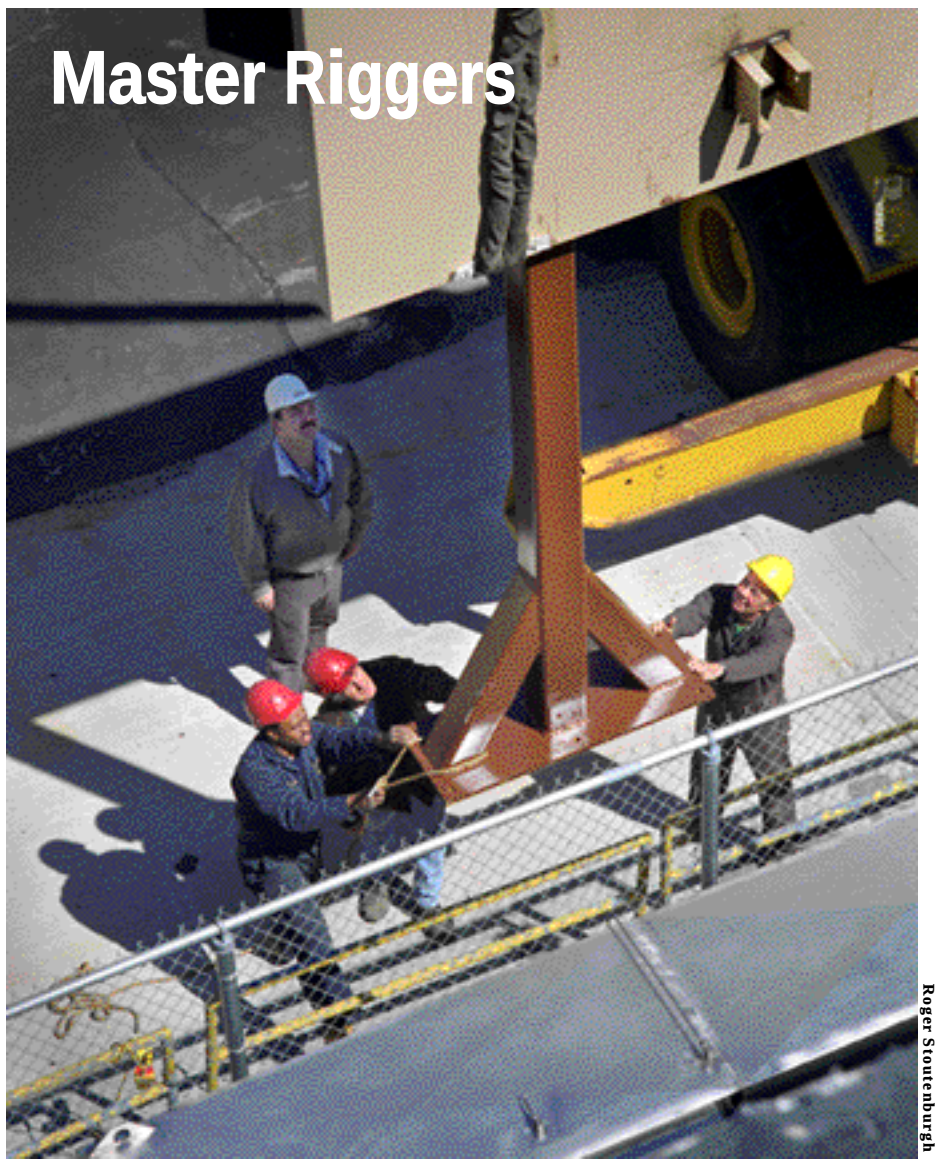
On Monday, May 8, 10 a.m.-3 p.m., Morrell Instrument Company, Inc., will hold a product show in Berkner Hall. On display will be new equipment such as the Nikon Veritas 3-D Video/Touch Probe CMM, the MM-40 Measuring Microscope, the Eclipse Polarizing Microscope, the SMZ High-Resolution Stereo Microscopes, the Spot RT Digital Microscope Camera, and the SONY HR 3-Chip Video System. Also available will be the Nikon E600FN Physiostation for brain-slice electrophysiology, the new TS100 Tissue Culture Inverted Microscope, the Nikon E400 Clinical Microscope and the new E200 small Clinical Microscope.

Omnipoint, May 12

On Friday, May 12, 10 a.m.-2:30 p.m. in Berkner Hall, Omnipoint Communications will discuss special rates for BNLers buying digital PCS wireless services on Omnipoint's GSM network.

Service plans include free caller ID, voice mail, SMS messaging, and FOX News headlines. Plans include one from $15.99 monthly with free phone, no minutes or contract; or $16.99 monthly for 40 minutes; or $36.99 monthly for 400 minutes, and others with unlimited weekend calling free for the year of the contract. Other options include special international calling and roaming. Call Richard Goll at 343-5900.

Master Riggers



Roger Stoutenburgh

The first graduates of BNL's master rigging training program are (from left) Jerry Hobson, Frank Strelecki and John Sterzenbach, seen with Alex Korol, rigging supervisor. The riggers are on the north side of Bldg. 801, installing a 30-ton steel plate for shielding.

This April, Plant Engineering riggers Jerry Hobson, John Sterzenbach and Frank Strelecki marked their one-year anniversary as the Lab's only certified master riggers among the 22 working riggers on site.

The master rigger training and certification program was put together a few years ago with the help of rigging supervisors Alex Korol and Jim O'Malley, site general supervisor Roy Barone, site superintendent Roy McWilliams, operations and maintenance manager Lance Warren, then training coordinator Patricia Bender and IBEW 2230 president Joe Buscemi.

Says Bender, "Each of the three men had already achieved the respect of their co-workers and customers as a rigger group leader. We are all proud that they stepped up to the challenge to become BNL's first master riggers."

On their own time, Hobson, Sterzenbach and Strelecki studied for and passed a test on each of nine books covering safety, rigging, and mathematics for mechanics. Next, they took a comprehensive mastery exam on all the material. Finally, they took a week-long training class and a practical test demonstrating their skill at using BNL rigging equipment to perform challenging and complex moves, both phases administered by Safety Systems and Solutions, of Troy, NY.

Says O'Malley, "Riggers go everywhere — from RHIC to Receiving, getting things moved in a professional and safe manner."

Riggers must have sufficient knowledge of mathematics to evaluate sling angles, load weights and center of gravity, and they must move machinery using such equipment as jacks, tank rollers, skids, forklifts, cranes and other standard rigging equipment. They are often called upon to transport and install one-of-a-kind objects such as multi-million-dollar detectors weighing tens of tons.

The master rigger training program is open to riggers who have worked at BNL for at least two years. Successfully completing the program brings certification by the Lab and a promotion to a higher pay grade.

— Mona S. Rowe

Road-Users: Drivers, Walkers, Runners Take Extra Care to Avoid Accidents

Now that the weather is brightening, more walkers, runners and cyclists are out and about on site. The Bulletin has been asked by several concerned BNL groups and individuals, including the BNL Traffic Committee, headed by Frank Marotta, to remind everyone that by following a few rules of common sense and courtesy, accidents can be avoided.

Drivers are reminded to restrict their speed and stay alert for unexpected moves from pedestrians or bicyclists, especially in the apartment area where many children live and play.

Pedestrians (walkers and runners) should always keep to the left on roadways, for a better view of oncoming vehicular traffic. If you walk with friends, pay attention to others who want to get past.

Wheeled people (bicyclists and skaters) should keep to the right on the roadways. Also, it is important to wear the proper protective equipment.

All bicyclists and pedestrians should avoid the north gate at lunch time, since it is now open to motor vehicle traffic from 11:30 a.m. to 1:15 p.m.

Hazwoper Refresher

On Wednesday and Thursday, May 17 and 18, PACE Union Local 1-431 is giving an 8-hour Hazwoper refresher course to BNL visitors, guests and employees. Contact Lou Evers, evers@bnl.gov, Ext. 4417, or Steve Coleman, coleman@bnl.gov, Ext. 2760, to reserve a seat.

Creutz Award *(cont'd)*

Creutz's new computational methods have been applied to QCD calculations, as well as other theoretical problems in physics. They also play an important role in the physics of the Relativistic Heavy Ion Collider (RHIC). Lattice calculations are the best theoretical estimates for the temperature of the elusive quark-gluon plasma, a form of matter that scientists believe has not existed since moments after the Big Bang. Scientists hope to detect quark-gluon plasma in RHIC.

After his most cited 1980 paper was published, Creutz mapped out numerous variations of lattice gauge theory. Currently, he is developing new algorithms for related computational problems. These also have potential applications in other areas, including superconductivity and magnetic materials. Another challenging problem is the inclusion of neutrinos in the lattice framework.

Michael Creutz earned a B.S. in physics from the California Institute of Technology in 1966, and a Ph.D. in physics from Stanford University in 1970. He worked as a Fellow of the Center for Theoretical Physics at the University of Maryland before he joined BNL in 1972 as an assistant physicist. He became an associate physicist in 1974, a physicist in 1976, and senior physicist in 1980.

An APS Fellow, Creutz received the Brookhaven Research & Development Award in 1991, and the Andrew Sobczyk Memorial Lectureship from Clemson University in 1997. He was chair of the APS Division of Computational Physics during 1994-95.

— Diane Greenberg

Mai Bei Award *(cont'd)*

frequency) dipole, to produce even stronger vertical oscillations in the beam and enhance the kicks on the protons' spin. The key, she says, is to turn the magnet on slowly, so it gives the protons incrementally bigger pushes to gradually increase their oscillations. Eventually, the strengthened kicks from the focusing magnets completely reverse the polarization of the protons, which is exactly what Bai wants. "We don't care if they are all pointing up or all pointing down, as long as they are all pointing in the same direction," she explains. Then she turns off the magnet in the same gradual manner to reverse the process. The method works, she says, without disturbing the distribution of the beam as a whole.

Bai's thesis represents two and a half years of work — and a lot of fun — at BNL, she says. She came to the Lab in 1996 from Indiana University, where she was doing her graduate work with S. Y. Lee, a former BNL physicist. It was Lee who steered her toward BNL to pursue her thesis work with the polarized proton beam at the Alternating Gradient Synchrotron (AGS).

"It was a big surprise," Bai says of winning the prize. "I feel very lucky to have the opportunity to work here, and I got so much help from so many people."

Thomas Roser, head of BNL's Accelerator Division, who was one of those helpers, says, "Mei's work has made it possible to accelerate polarized beam reliably at the AGS. Her techniques of using an RF dipole magnet will also be used in the Relativistic Heavy Ion Collider (RHIC) for polarized beam acceleration and for studying nonlinear beam dynamics. In fact, her use of an RF dipole has so many applications that it may soon become a standard diagnostic tool at large colliders."

Bai received her award at the April meeting of the American Physical Society in Long Beach, California.

— Karen McNulty

Hospitality News

The Hospitality Committee invites all on-site residents, their spouses and friends to take part in the following activities. More details are posted in the laundry and on the door of the Recreation Building, both located in the apartment area.

Welcome Coffee

Coffee is served to apartment area residents on Tuesdays, 10-11:30 a.m., in the lounge of the Recreation Building in the apartment area. Call Mimi Luccio, 821-1435, for details.

Parent-Toddler Group

Parents of two- and three-year-olds are invited to bring the children to the Recreation Building every Wednesday, 9:30-11:30 a.m. For more information, call Sarah Zill, 821-2602.

Garden Plots

To dig and plant, reserve a space among the free garden plots behind the laundry. Call Shashi Somani, 344-1056.

Family Potluck Party

There will be a Merry May Family Potluck Party at 6 p.m. on Friday, May 26, in the Recreation Building. Bring a dish to share. There will be entertainment for the children, but bring two dollars per child for expenses. Call Vicky Chang, Ext. 1000, or Nora Robles, 345-3204.

March Into May Mid Points Now Due

March Into May is a ten-week physical activity program in which participants record their exercise time to score points. Now that five weeks have past, March Into May captains are collecting participants' total points accumulated as of April 23. Those who submit their points are eligible for a raffle drawing for prizes, so hurry to turn in your point score.

A second drawing for prizes will be held for those who turn in their remaining points at the program's end, and all ten-week participants will get a T-shirt. For more information, call Mary Wood, Ext. 5923.

Rifle & Pistol Club

The BNL Rifle & Pistol Club's next monthly meeting will be on Wednesday, May 10, at noon, in the Bldg. 535 conference room. For more information call Joe Gatz, Ext. 4212, Jim Durnan, Ext. 5993, the club hot line, Ext. 2658; or go to the club's web page at www.berahome.bnl.gov/clubs/rpc/rpc.html.

Arrivals & Departures

Arrivals

Carole Asnaghi ..... Biology
Steven Giovine ..... Financial Services
Balwan S. Hooda ..... Env. Services
Thomas Martin ..... Info. Services
Joon M. Song ..... Biology
Paul Vaska ..... Medical

Departures

Alfred W. Berretta .. Safeguards & Sec.
Alice M. Belmonte ..... Plant Eng.
Pramod K. Sharma .... Env. Sci. & Tech.
Michael J. Witte ..... C-A

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On the World Wide Web, the Brookhaven Bulletin is located at www.pubaf.bnl.gov/bulletin.html. A Weekly Calendar listing scientific and technical seminars and lectures is found at www.pubaf.bnl.gov/calendar.html.

Roger Stoutenburgh

DOE, BNL Congratulate First Abilities Graduates

Displaying their diplomas, the graduates are: (seated, from left) Vannessa Schieferstein, Tricia Bunai, and Wayne Davis; (standing, from left) Justin Wojciechowski and Warren Murray. With the graduates are: Annette Falcetta (standing, left), trainer for Abilities, Inc.; Sol Maria Rosario, Diversity Office; and Robert Gordon, DOE Brookhaven Group.

A ribbon-cutting ceremony was held at BNL in January to mark the beginning of a training program offered by Abilities, Inc., for individuals with disabilities who want to become laboratory assistants (see Brookhaven Bulletin, February 11, 2000).

Now their dream is well on its way to coming true. The first class of five students graduated and are ready for entry-level positions in clinical, pharmaceutical, environmental and research laboratories.

Lorraine Merdon, Manager of BNL's Diversity Office, commented, "It is very gratifying to see the first group of students graduate. We are pleased to have partnered with the DOE Brookhaven Group to improve employment opportunities to residents from the communities of Long Island."

Conducted in a specially renovated classroom in Brookhaven's Medical Department, the Laboratory Assistant Training program is being offered to about 12 students each semester, three times per year for 15 weeks per semester. —Diane Greenberg

Weight Watchers Starts Today

The Weight Watchers At Work program claims "We Shape Futures," and helps many people change their shape for the better. Sign up now for the ten weeks of one-hour sessions that start at noon today, Friday, May 5, in the small conference room, in the Physics Department, Bldg. 510. The cost is $89, which may be paid by check, cash, Mastercard or Visa.

Credit Union Benefits

All BNL employees are eligible to open an account at Teachers Federal Credit Union (TFCU). TFCU offers dividends on savings products, advantageous interest rates on loans and a wide array of financial services.

Checking accounts are free, with no minimum balance to maintain, no per-check charges, and no monthly service fees. If you have direct deposit to your TFCU account, boxes of checks (175, basic design) will be supplied to you at no cost. For more information, stop at TFCU's on-site branch or visit any of their other branches.

SCCC Summer/Fall Semester On-Site Courses

If a minimum number of employees register, Suffolk County Community College will offer the courses listed below on-site during the summer and fall semesters. An information/preregistration meeting will be held on Tuesday, May 9, at 5:15 p.m. in the Human Resources training room, Bldg. 459. All employees who are interested in taking courses at Suffolk County Community College are welcome.

Employees taking college courses may apply for tuition assistance. BNL offers tuition advances or reimbursements at 75 percent for undergraduate or vocational courses. For more information, contact Marilyn Pandorf, Ext. 5251, pandorf@bnl.gov; or Starr Munson, Ext. 7631, munson@bnl.gov.

Summer Semester

CS30 – Portfolio Preparation. Provides adults with a vehicle for identifying and demonstrating college-level learning achieved outside the classroom. Students are provided the necessary information and techniques that will enable them to prepare the portfolio, which may then be presented to the faculty for evaluation to earn equivalent credit, which can be applied towards a SCCC degree. No prerequisite, 1 credit hour.

BA11 – Introduction to Business. Recommended as background for further studies in business, topics include organization, marketing, purchasing, production, finance, personnel, labor relations and government regulation. No prerequisite, 3 credit hours.

CI21 – Software Applications. Hands-on computer applications enabling students to use the computer to solve problems from many different fields. Spreadsheets, word processing, and database management are implemented. No prerequisite, 4 credit hours.

Fall Semester

ID52 – Women's Legal Place. Interdisciplinary study course which examines the philosophical and social factors determining women's current and historical status in the American legal system. Issues include employment, divorce, child custody and insurance. No prerequisite, 3 credit hours.

BA21 – Business Mathematics. Does not satisfy mathematics/science elective requirements, covers use of mathematics in various business applications. Topics include percentages, interest, marketing computations, insurance, taxes and investment problems. No prerequisite, 3 credit hours.

Possible Fall Course

CM12 – Introduction to Programming Using Visual Basic. Students learn to use Visual Basic to write structured event-driven programs. Topics include commands and algorithm development, flowcharting, coding and debugging programs. Prerequisite: MA07 or equivalent, 4 credit hours.

Beethoven at Noon Wednesday, 5/10

The Wednesday noon recital on May 10 brings a treat to Berkner Hall: a live performance of a remarkable early work by Beethoven, his Opus 20 Septet.

Seldom heard, owing to the expense of combining the forces of four string players with a clarinet, bassoon and French horn, the Septet of 1799 was written in Vienna, which, it is known, was amply supplied with virtuoso wind players at that time. Beethoven, then 29, was also working on his First Symphony. The six-movement Septet will be performed by seven performers from the State University of New York at Stony Brook's doctoral program.

Carry lunch into Berkner if you wish, but don't miss a beat!

Volleyball Party

All Volleyball players, their families and friends are invited to the BERA Volleyball League Party. The party will be held at the Brookhaven Center on Friday, May 19th, starting at 5:30 p.m.

Tickets are $10 per person which will include: one-hour open bar from 5:30-6:30, buffet dinner, cake and coffee 6:30-8:00 and music by DJ Ed Taylor. A cash bar will be available after the first hour.

Everyone must have a ticket. To purchase tickets, bring cash to either Teresa Baker, Ext. 7504, Bldg. 526; Clayton Hamilton, Ext. 2360, Bldg. 51; or Laurie Pearl, Ext. 5520, Bldg. 515; by Friday, May 12. No tickets will be sold at the door.

GLOBE@BNL

The next monthly meeting of the gay and lesbian club, GLOBE@BNL, will be on Wednesday, May 10. For more information and the meeting's location, call Mike Loftus, Ext. 2960, or Chris Gardner, Ext. 4537; or go to the club's web site: http://homestead.juno.com/bnlglobe/files/home.html.

Bowling

Awards Dinner

The Bowling Awards Dinner will be held at Ladakins on Friday June 9, 6-10 p.m. The cost is $5/bowler, $10/bowler's guest and $20/non-bowler. The cost includes dinner, DJ, and open bar. Tickets must be purchased on or before June 6. For tickets contact Tracy Blydenburgh, Ext. 4422 or mail/deliver **checks only,** made out to BERA Bowling, to T. Blydenburgh, Bldg 750.

Bowling News

• **Men's League** — The BERA Men's League has separated from the BERA Mixed League and will convert to a commercial money league in September. The league will still bowl on Tuesday nights but will no longer be sponsored by BERA. If any BNL male employee is interested in bowling on this league, contact Ron Mulderig at Ext. 3084, e-mail mulderig@bnl.gov.

• **Mixed League** — To maintain the BERA Mixed League next year, we need to know how many employees expect to rejoin. Volunteers are needed to fill the bowling officer positions of President, Treasurer, and Secretary, which must be filled or the league may be terminated. Any BNL employee/retiree may be an officer. Be sure that anyone nominated is willing to accept the position. Contact Tracy Blydenburgh, Ext. 4422, or Debbie Keating, Ext. 3888, before June 2.

BERA Wine Tour

BERA's first Wine Tour & Tasting trip to the east end wineries will be on Saturday, May 20. Visit Paumanok, Jamesport, Pugliese, and Pindar Vineyards. The last stop will be in the Village of Greenport, with approximately two and one-half hours of free time to shop, eat or sightsee.

The trip, which is for adults of 21 years or older, costs $23 and includes round-trip coach bus transportation, a wine tour, and a tasting at each vineyard. The bus will leave the Brookhaven Center promptly at 11:30 a.m. and return at approximately 8 p.m. You may bring a bag lunch or snacks to eat on the bus.

Make paid reservations at the BERA Sales Office in Berkner Hall, weekdays, 9 a.m.-3 p.m. For more information, call Andrea Dehler, Ext. 3347, or M. Kay Dellimore, Ext. 2873.

Classified Advertisements

LABORATORY RECRUITMENT - Opportunities for Laboratory Employees.

DD8863. SECRETARIAL POSITION - Requires an AAS degree in secretarial science or equivalent experience, excellent oral and written communication skills, experience with MS Word and a knowledge of MS Office applications. Knowledge of BNL systems such as IPAP and the travel systems highly desirable. Will provide varied secretarial and clerical support to the Spallation Neutron Source (SNS) Project Office. Collider-Accelerator Department.

OPEN RECRUITMENT - Opportunities for Laboratory Employees and Outside Candidates.

MK8239. CHAIR, ENVIRONMENTAL SCIENCES DEPARTMENT - Reports to the Associate Laboratory Director for Energy, Environment and National Security. Candidates for this position must have a record of technical accomplishment in one of the disciplines represented by the Department, and previous experience administering a large technically diverse group. The successful candidate should have a clear vision of how they will lead the Department to the highest levels of excellence within a multidisciplinary high technology environment; establish successful working relationships with the Department of Energy, other federal, state, and private funding agencies, and; strengthen industry and academic collaborations. The chair is responsible for all administrative, budgetary, and personnel decisions within the Department. The successful candidate is expected to exhibit excellent leadership and management skills, to provide evidence of responsible fiscal management, and to possess effective communication skills. Energy, Environment and National Security Directorate.

MK8241. CHAIR, ENERGY SCIENCE & TECHNOLOGY DEPARTMENT - Reports to the Associate Laboratory Director for Energy, Environment and National Security. We seek an experienced and articulate leader who as Department Chair and the Laboratory's principal spokesperson on energy issues will further Brookhaven's historic commitment to high quality science and engineering. He/She will also have line responsibility for safety and environmental protection and be responsible for all administrative, budgetary, and personnel decisions with the Department. Placing this function in a separate Department underscores the Laboratory's commitment to playing a larger role in DOE's energy mission and the Chair will be expected to ensure that our programs are aligned with that mission. Energy, Environment and National Security Directorate.

MK8242. DIVISION HEAD, ENVIRONMENTAL RESEARCH & TECHNOLOGY DIVISION - This newly formed division within the Environmental Sciences Department conducts basic research in environmental science, and develops and evaluates technologies for remediation of sediments, soils and wastes. Ongoing research and development activities include microbiology, geochemistry, biogeochemistry, microgeophysics, phytoremediation, treatment of hazardous and radioactive wastes, fate and transport of contaminants, and public policy issues. The successful applicant must have an established career with a strong background and interest in the application of synchrotron radiation to environmental research, a distinguished publication record, and a demonstrated history of funding from federal agencies. The position requires excellent oral and written communication skills as well as good interpersonal skills to work effectively with a diverse group of scientists. Demonstrated ability to manage an interdisciplinary group engaged in both basic and applied research, and to integrate these R&D activities into realistic solutions for environmental problems is essential. Environmental Sciences Department.

MK7959. MANAGER, SCIENTIFIC COMPUTING - Position reports to the Chief Information Officer/Manager, Information Technology Division. Requires an advanced scientific degree, Ph.D. preferred, and experience in managing a successful team in scientific computing. Must possess strong interpersonal, managerial, communications and presentation skills and maintain current knowledge of technology advances and be a team builder/leader, have an appreciation of the value of research and knowledge and be highly motivated. Will be responsible for maintaining, expanding and operating the shared scientific computing capabilities of the Laboratory to meet the needs of the scientific research community which will include: creating and managing a center of excellence providing applications development and support, structured project management, data analysis and management and visualization for scientific research. In addition, will recruit, train and direct staff of 25 high quality scientific computing specialists, work closely with and support major computing initiatives including the Center for Data Intensive Computing and the RHIC/US Atlas Computing Facility and set the strategy for the Laboratory's network infrastructure. Information Technology Division.

MK8883. ASSOCIATE PHYSICIST - Requires a Ph.D. and several years' experience in either high-energy or relativistic heavy-ion physics, a thorough knowledge of both off-line/on-line software at the infrastructure and application software levels for modern physics detectors, excellent communication skills and the ability to lead a collaborative software effort for the STAR Project. Experience in managing or coordinating software development efforts and in designing, developing, and implementing off-line/on-line software highly desirable as is knowledge of reconstruction, simulation and analysis software and database systems for large modern physics detectors. Position will be as the Online Software Developer for STAR, a large collider detector experiment. Will be responsible for participating in the ongoing development, implementation and operation of the online computing systems for STAR and for helping to lead a collaborative software effort focused on that activity. Will be expected to play a strong role in the STAR scientific program. Under the direction of T. Hallman. Physics Department.

MK8882. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in experimental particle physics in the field of hadron spectroscopy, expertise in physics analysis based on modern database, expert knowledge of FORTRAN and C++ on Unix and an ability to work independently. Research involves the search for exotic mesons, i.e., those that cannot be bound states of a quark and an antiquark, based on the data produced at the BNL multiparticle spectrometer; comparative study of the exotic mesons discovered at BNL with those seen in other Laboratories; and the search for scalar and tensor glueballs produced in the BNL data. Under the direction of S.-U. Chung. Physics Department.

NS8862. ELECTRICAL ENGINEERING POSITION - Requires a BSEE (MSEE preferred) and five years' experience designing sophisticated mixed analog and digital instrumentation for acquiring and processing wide dynamic range, low signal-to-noise ratio signals. This is a "hands-on" position designing systems for characterizing particle beams for particle accelerators. Collider-Accelerator Department.

NS7957. UNIX SYSTEM ADMINISTRATION/COMPUTER SECURITY POSITION -Requires a bachelor's degree, experience with UNIX system administration (Solaris and/or Linux), advanced knowledge of programming (C or Java) and/or scripting (Visual Basic, Perl, Python) languages and an understanding of TCP/IP networking and related security issues. A background with Windows NT and Enterprise Management Systems such as CA, TNG or HP Openview preferred. Investigating the Kerberos authentication system, will configure and maintain Linux-based application proxy servers and work with intrusion detection reporting and analysis. Information Technology Division.

NS7958. REMOTE ACCESS ADMINISTRATION/COMPUTER SECURITY POSITION - Requires a bachelor's degree, experience with Window NT system administration in a large-scale environment, knowledge of VisualBasic and Perl, and a understanding of TCP/IP networking and related security issues. Background with Enterprise Management Systems such as CA, TNG or HP Openview is a plus. Will provide Virtual Private Network client and server management, deployment or remote intrusion detection agents and report on and analyze the intrusion detection system. Information Technology Division.

NS7609. ENVIRONMENTAL ENGINEERING POSITION - (term appointment) Requires a BS in environmental engineering or earth/quantitative environmental science, MS strongly preferred, and excellent communication and computer skills. Some background in earth science and data analysis is desirable. Responsibilities include supporting projects with groundwater flow and contaminant transport modeling, GIS systems, graphical data analysis and presentation and the implementation of groundwater protection and pollution-prevention measures. Environmental Services Division.

DD8582. CLINICAL RESEARCH CENTER MANAGER - (reposting) Requires a BS in management or related technical field; MS preferred, excellent oral and written communication skills, and the ability to work independently. The ability to interpret and apply federal and other applicable regulations to BNL clinical research operations is necessary, as is computer proficiency. Reporting directly to the Chair, will provide line management for the operation of the Clinical Research Center. Responsibilities will include the direct supervision of the administrative, technical, and medical staff responsible for the day-to-day operations of the Center. Will maintain policy and procedure documents, conduct and document assessments and reviews and participate in committee activities and special projects. Medical Department.