

A Very Good Run — Update on the Muon g-2 Experiment at the AGS

We've just finished a very good run," said Gerry Bunce, Project Manager of Experiment 821 (E821), the muon g minus 2 (g-2) experiment at the Alternating Gradient Synchrotron (AGS). "The beam was great, and we've collected data on 10 billion muon decays."

BNL scientists team with researchers from 11 institutions in Germany, Japan, Russia, and the U.S. to work on E821, which started taking data in 1997. E821 is designed to refine one of high-energy physics' most precise measurements, known as g-2, which indicates the strength of a quantum mechanical effect made by certain forces on the muon particle's magnetism.

The great interest of this effect is that it is believed to be made by three forces: the weak force, which is responsible for particle decay involving neutrino particles; the strong force, which holds an atom's nucleus together; and the electromagnetic force, in which electricity and magnetism are combined. These are three of the



Roger Stoutenburg

In the AGS experimental area, some of the muon g-2 team are pictured with the muon storage ring in the background.

four known forces that govern the interactions of matter and energy.

Experiments at CERN, Switzerland, during the 1960s and 1970s, had already made the g-2 measurement to an extraordinary precision. These results established a better knowledge of muon behavior and also helped validate the theory of quantum electrodynamics (QED), which links the theories of electrodynamics, quantum mechanics and relativity.

Now, however, new technology has made it possible to refine the original result to an even higher level of sensitivity. So, the present measurement of the tiny g-2 quantum effect may give breakthrough information on the laws of physics.

One modern technical improvement is in the stability of the magnetic field. The muons are stored in a muon storage ring magnet with a diameter of 14 meters. The magnet is energized by three superconducting coils, the world's largest in diameter, which were built here at BNL. Because the coils

are superconducting, electricity flows through them with virtually no resistance. Also, the steel magnet was constructed and then shimmed, or adjusted, to unheard-of precision. These features help provide an extremely uniform magnetic field, which gives the best chance of precise measurements.

In addition, an instrument invented for E821 can travel through the storage ring under a vacuum to map the magnetic field. This exercise, performed twice a week for the run of the experiment, ensures that the field is known to unprecedented accuracy.

"By looking at the contour map of the magnetic field, you can see how amazingly flat it is," said E821 spokesperson Lee Roberts from Boston University. "The contour lines at the edge of the map show variations of just one millionth of a tesla, which is incredibly small — but the whole middle part of the field, where the muons are most of the time, is blank, showing its extraordinary uniformity." (see Diagram 1, left).

Another example of data from the recent run is especially noteworthy, Roberts said. After a muon travels around the storage ring several hundred times, it decays, emitting a positron that travels forward at an angle that indicates the g-2 effect on the muon. Therefore, detectors are placed to track the forward-moving positrons as they are emitted. The number of positrons arriving from muon decay is so regular and has so little background (see Diagram 2, below), that it will be possible to get an excellent result, he said.

Bill Morse, Physics Department, the g-2 resident spokesman, commented that the success of the run was greatly assisted by the dedication of the AGS technical staff. "Throughout the twelve weeks, they delivered a high intensity beam that was very reliable," he said. "So, we were able to get good data on 10 billion muon decays, which will help minimize the statistical error in our measurements."

(continued on page 3)

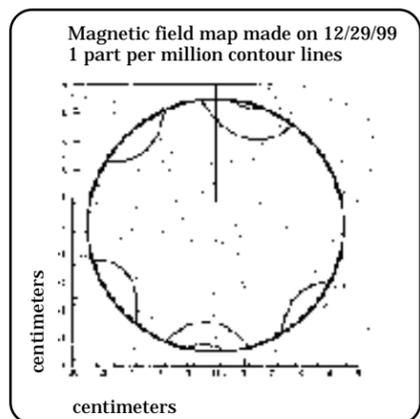


Diagram 1. A contour map of the magnetic field in which the muons travel in the g-2 experiment at the AGS. The contours at the edges show extremely small variations of one part in a millionth of a tesla, a magnetic field measure. The blank area of the central field shows that it has achieved the experiment's desired uniformity.

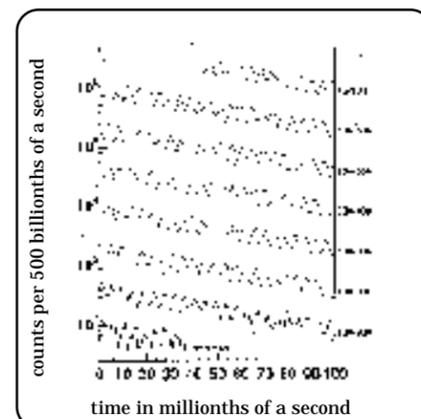


Diagram 2 shows a number of positron particles being emitted by muons as they decay while circulating the muon storage ring. This large amount of data was collected in less than one day, due to the reliable, high intensity beam delivered by the AGS.

BSA Distinguished Lecture

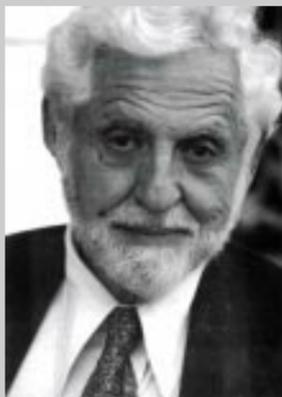
Inventor of Birth Control Pill To Give Talk May 18

Carl Djerassi, the scientist who first synthesized the oral contraceptive now popularly known as "the Pill," will give a BSA Distinguished Lecture on Thursday, May 18, at 4 p.m. in Berkner Hall. The topic of the talk will be "Technology and Human Reproduction: 1950-2050."

After the talk, Djerassi will provide a free copy of one of his books to each lecture attendee, and he will be available for 15 minutes to autograph his books.

A chemistry professor at Stanford University, Carl Djerassi is one of the few American scientists to have been awarded both the National Medal of Science (for synthesis of the Pill) and the National Medal of Technology — for promoting new approaches to insect control.

A member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences, Djerassi has received 17 honorary doctorates and numerous other honors, including the Wolf Prize in Chemistry and the American Chemical Society's highest award, the Priestley Medal. — Diane Greenberg



Carl Djerassi

354th Brookhaven Lecture, May 17

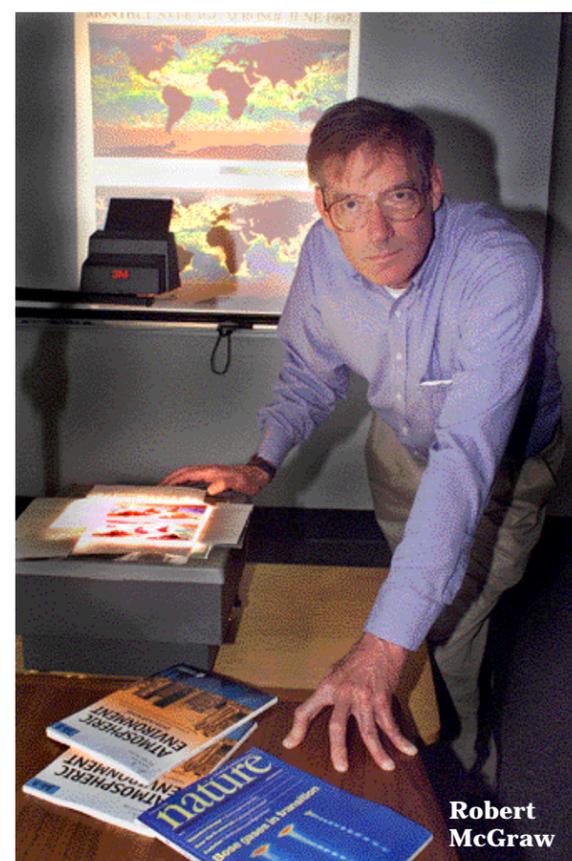
From Aerosol Microphysics to Geophysics

Aerosols — clouds of tiny particles suspended in the air — can have significant effects on climate and on people's health. Yet aerosols' complex behavior, which varies according to the properties of the particles and, for example, weather and geographic conditions, makes them very difficult to observe and characterize.

At BNL, researchers have a new approach to representing aerosol dynamics in the atmosphere. Developed over six years, their successful computer model describes complex atmospheric aerosol processes in a module that has now been incorporated into the full BNL atmospheric transport model. Plans to extend the method to non-atmospheric applications such as simulating the way particles aggregate in flames are now underway.

To explain the aerosol module and how it works, Robert McGraw, Environmental Sciences Department (ESD), will give the 354th Brookhaven Lecture, "From Aerosol Microphysics to Geophysics," on Wednesday, May 17, at 4 p.m. in Berkner Hall. McGraw will be introduced by Steven Schwartz, also of ESD.

Robert McGraw received his B.S. in chemistry from Drexel University, and his M.S. and Ph.D. in physical chemistry from the University of Chicago. After four years at BNL, 1981-85, he joined the Rockwell International Science Center and did research on nonlinear optics. In 1993, he returned to the fields of nucleation and aerosol dynamics and to the Lab and was granted tenure in 1995.



Robert McGraw

Roger Stoutenburg

Refreshments will be served before and after the lecture. To accompany McGraw for dinner at the Sea Basin restaurant after his talk, call Maggie Marsch, Ext. 3275, by noon on May 17. — Liz Seubert



BSA Scholars 2000

Roger Stoutenburgh

Spring is in the air, opportunity lies ahead — and BSA has announced the 15 winners of the third annual BSA Directors' Scholarships, which go to children of BNL employees in continuation of a tradition instituted at

Brookhaven National Laboratory 34 years ago. 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.



Kate Durnan, daughter of James Durnan, Radiological Control Division, resides in Wading River and attends Shoreham-Wading River High School. As yet undecided on her major, she will study at Penn State University at University Park.



Marjorie Fitzpatrick, the daughter of Robert Fitzpatrick, Energy Sciences & Technology Department, lives in Mount Sinai and is a senior at Mount Sinai High School. She will study neurobiology and music at Massachusetts Institute of Technology or Harvard University.



Christina Hanson, daughter of Louise Hanson, Office of Educational Programs, and Jonathan Hanson, Chemistry Department, lives in Wading River and attends Shoreham-Wading River High School. She will study engineering at Brown University.



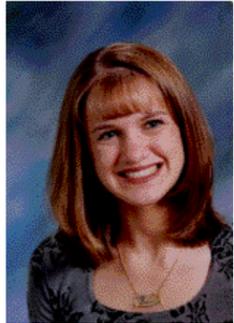
Carol Kane, twin daughter of Steven Kane of the Physics Department, lives in Brightwaters and will graduate from Bay Shore High School. She will major in information technology and psychology at Rensselaer Polytechnic Institute.



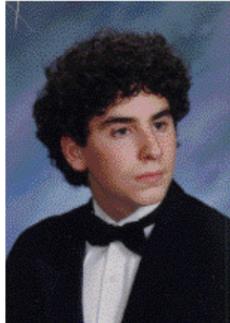
Susan Kane, twin daughter of Steven Kane of the Physics Department, goes to Bay Shore High School and resides in Brightwaters. She will attend Rensselaer Polytechnic Institute, majoring in engineering and physics.



Eric Li, the son of Daqi Li of the Environmental Restoration Division, lives in Dix Hills. After his graduation from Half Hollow Hills High School West, he will major in computer science. He has not yet decided where he will study.



Lisa Polonski, daughter of Gary Polonski, Central Shops Division, resides in Middle Island and will graduate from Longwood Senior High School before attending Marist College. She is considering a career in elementary education or medicine.



Kip Praissman is the son of Laura Praissman, Biology Department. He lives in East Setauket and will graduate from Ward Melville High School. He will attend Dartmouth College, possibly majoring in business or law.



Krystina Priest, the daughter of Robert Priest of the Reactor Division, is in her last year at Mount Sinai High School and resides in Mount Sinai. At Villanova University, she will study mathematics or commerce and finance.



Nuria Protopopescu, the daughter of Serban Protopopescu, Physics Department, is a resident of Miller Place and will graduate from Miller Place High School. She has decided to major in environmental biology at McGill University.



Kristin Stoeber, daughter of Walter Stoeber of the National Synchrotron Light Source Department, lives in Sayville and is in her last year at Sayville High School. She has decided to major in chemical engineering at the University of Delaware.



Shannon Sullivan is the daughter of Kenneth Sullivan, Reactor Division. A resident of Wading River, she attends Shoreham-Wading River High School. At Lafayette College, she will study government, law, and foreign languages.



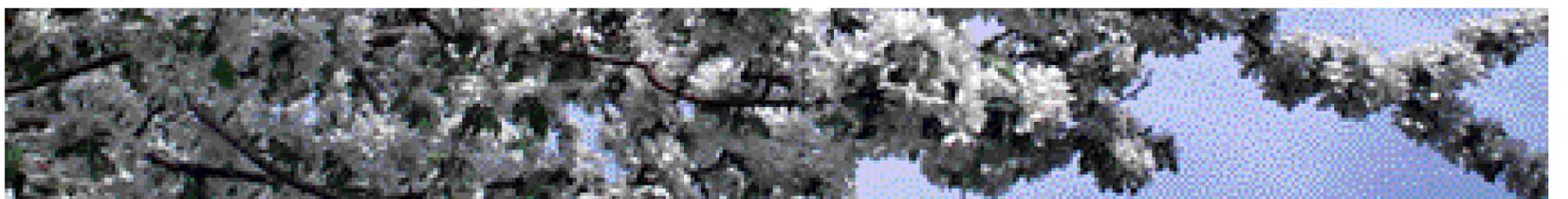
Julie Takacs, daughter of Peter Takacs of the Instrumentation Division, resides in Riverhead. She will graduate from Riverhead High School and then attend Franklin and Marshall College to study biology, neurobiology, or music.



Vidyasagar Vairavamurthy is the son of Murthy Vairavamurthy, Environmental Sciences Department. He lives in Wading River and attends Shoreham-Wading River High School. He will study chemical engineering and biochemistry at the California Institute of Technology.



Helen Weng, daughter of Chan Chuan Weng and Wu-Tsung Weng, both of the Collider-Accelerator Department, lives in Mount Sinai. After graduating from Mount Sinai High School, she will major in electrical engineering at Columbia University.



Muon g-2 Update *(cont'd)*

The 10 billion decays are now being analyzed at Boston University, the University of Illinois, the University of Minnesota, Yale University, and BNL. But these analyses will not be the last.

"We've got another year to run," Morse said. "Since we collected data on positively charged muons this year, we want to do negatively charged muons next year."

The effect of g-2 should be of the same magnitude whether the muon is charged positively, as antimatter, or negatively, as matter, Morse explained. Thus, the experiment should give information on the physics laws governing matter and antimatter also.

— Liz Seubert

BNL/BSA Spring Walk

Celebrate Health 2000 and March Into May—join the 2-mile walk scheduled at noon on Tuesday, May 16, from the Science Education Center, Bldg. 438, across from Berkner. Registration is not required. Wear a BNL tee shirt. Free water bottles will be available. For more information, call Mary Wood, Ext. 5923.

Arrivals & Departures

Arrivals

Charles P. Neuman NSLS

Peter F. Picciano Plant Eng.

John G. Selva Envir. Services

Departures

Thomas Barragato Plant Eng.

Michael J. Coffey .. Energy Sci. & Tech.

Revised Tennis Reservation System

These rules for court use are effective today, Friday, May 12, at noon, for Monday courts. The rules are posted courtside and in the BERA Sales Office, Berkner Hall. For more information on rules and format, contact Joe Carbonaro, Tennis Chair, Ext. 5139, carbona1@bnl.gov, or call Ken Perkins, Ext. 2147.

Advance Reservation System A

• Courts 1, 2 and 3 on the south side of the wall may be reserved for weekday play the day before play. Lunchtime play is limited to one hour for both singles and doubles. **If you reserve and cannot play, you must cross out your name to free the court for others. If two players are not on the court within 15 minutes of the reserved time, the reservation is forfeited, and the reserver may not reserve courts for one week.**

• You must reserve **on sign-up sheets posted at the tennis courts no sooner than noon on the day before play.** Monday play may be reserved on the previous Friday if you did not play on Friday. If you sign up, you must be a player and must include a legible last name and phone number. **No one playing on a reserved court at noon may reserve a court until after 1 p.m., thus providing a one-hour window of opportunity for non-players to reserve a court. Also, no one may reserve a court for two consecutive days, including Friday and the following Monday.**

On-Court Scheduling System B:

• The two remaining playable courts are available for players who sign the blackboard at court side at the time of play, first-come, first-served. Lunchtime play is limited to half hours for both singles and doubles.

System A can be used only by Group 1 of the priority players listed below; System B, by groups 1 and 2. Groups 3 and 4 may play during non-reservation times only:

Group 1 - Lab employees, facility users, visitor and guest appointees, retirees.

Group 2 - Lab employees playing with family members or personal guests.

Group 3 - Immediate family members of Lab employees.

Group 4 - Personal guests of Lab employees.

2000 Tennis Ladder

The BERA Tennis Committee's ladder begins today, to run until Daylight Saving Time ends. For a \$1 fee, players of all levels who are BERA members may sign up for the ladder at the BERA Sales Office, weekdays, 9 a.m. to 1:30 p.m., in Berkner Hall.

During the first two weeks, open challenges are allowed at any level of the roster. After that, a player may only challenge players on the same rung or one rung higher. The challenger is expected to provide a new or only once-used can of tennis balls. Unless players agree beforehand to another scoring system, the first player to take eight games wins; a 12-point tie-breaker will be played in the event that the score is tied at 7-7.

ANS Meeting, 5/17

At the next meeting of the Long Island Chapter of the American Nuclear Society (LIANS), Andrew Kadak, president of the American Nuclear Society, will discuss the future of nuclear energy.

The meeting will be on Wednesday, May 17, at the Printer's Devil restaurant in Port Jefferson. Appetizers will be served at 6 p.m., dinner at 7 p.m. and the talk at 8 p.m. The cost is \$27 for LIANS members, \$30 for others. Make reservations by Monday, May 15, by calling Arnie Aronson, Ext. 2606.

Demo, 5/16

Contech RTI will be on site on Tuesday, May 16, from 10 a.m. to 2 p.m. in Berkner Hall to demonstrate testing and measurement equipment.

On display will be high speed digitizers and digital storage scopes, data acquisition systems, recorders, power analyzers, new DSP boards, low-to-high voltage DC sources, equipment racks and consoles and AC power distribution and control units.

Representatives will be on hand to answer questions, and employees can enter a drawing for a new digital camera.

LabVIEW Training

The Information Technology Division (ITD) has scheduled a five-day LabVIEW class. This hands-on class will meet from Monday to Friday, July 10-14, from 8:30 a.m. to 4:30 p.m., in the seminar room of Bldg. 515. The training fee is \$1,925 per student.

To register, send an ILR for the appropriate amount to Pam Mansfield, Bldg. 515, by May 31. For more information, contact Mansfield, Ext. 7286, or pam@bnl.gov.

See the ITD training page at www.ccd.bnl.gov/bnl/training for registration forms, information, and course outlines.



Roger Stoutenburgh

Back on the Court

BNL's Richard De Rocher (left), with a transplanted kidney, practices racquetball with Michael Furia (center), who had a double lung transplant and John Gerweck, Transplant Games supporter, who owns Long Island Racquetime in Farmingville.

Nine months ago, Richard De Rocher had a kidney transplant. In June, he will compete for Team Liberty, representing the New York and New Jersey area in the 2000 U.S. Transplant Games, a national sporting competition involving over 1,500 transplant recipients.

"The whole purpose of the games is to raise awareness of organ donation," said De Rocher. "When someone is fortunate enough to receive a transplant,

"The whole purpose of the U.S. Transplant Games is to raise awareness of organ donation."

the quality of their life improves dramatically. In my case, it has allowed me to continue to work and to continue with activities I enjoy."

In the games, De Rocher will be competing in singles and doubles racquetball, a sport that he has played for over 20 years. His partner in doubles is Michael Furia, who had a double lung transplant in December of 1997. Furia works in West Babylon at Roof Pro.

De Rocher came to Brookhaven in 1988 as a quality assurance engineer in the Reactor Division. He joined the BERA racquetball club soon after. "The racquetball club, under the leadership of Bob Marascia, has done a lot to prepare me for the competition," said De Rocher. "We play at Long Island Racquetime, in Farmingville, where the owner, John Gerweck, has been a big help to me and to the BERA racquetball club."

When De Rocher makes the trip to the games, being held June 21-24 at the Disney Wide World of Sports in Orlando, Florida, it will be a family affair. His wife Debbie, who offered a kidney and was a match, will be going.

So will his brother Paul, who donated his kidney. Another brother, Alan, also offered to donate a kidney. "A kidney can be transplanted if the blood types match, but if you can get a kidney from a blood relative, it is usually a better match," said De Rocher.

After his transplant operation last August, De Rocher was back to work in four weeks and back on a racquetball court in eight weeks.

Racquetball is a fast game played on an indoor court with a rubber ball. "The ball is played off the floor, the ceiling and all four walls," explained De Rocher, who described the game as similar to tennis in strokes but more like volleyball in scoring.

De Rocher was born with one kidney, but he didn't know it until he came to work at the Lab and had a new-employee physical. "The blood work revealed that I had one kidney, and it wasn't working that well," he

"When someone is fortunate enough to receive a transplant, the quality of their life improves dramatically."

recalled. "Eventually, it got to the point where it couldn't function properly, and my doctor said I needed a transplant or dialysis." He says he feels great now and is looking forward to the June competition.

For more information about organ donation and transplantation, contact the National Kidney Foundation, which has a local office at 222-1883. Go to www.transplantgames.org to learn more about the Transplant Games. If you would like to become a Team Liberty sponsor, contact De Rocher at Ext. 7013. — Mona S. Rowe

Eat at Brookhaven Center, 5/13

Tomorrow, Saturday, May 13, weekend breakfast and lunch will be served from 7:30 a.m. to 2 p.m. at the Brookhaven Center, not at the cafeteria. The change is being made to accommodate the annual student science fair, which will be held in Berkner Hall at that time.

Weight Watchers Revise Start Date to 5/17

Weight Watchers At Work has revised its start date. The ten weeks of one-hour sessions will begin at noon on Wednesday, May 17, in the Brookhaven Center south room. The cost is \$89. Pay by check, cash, Mastercard or Visa.

Skin Cancer Screening, 5/25

A board-certified dermatologist will screen employees for skin cancer on Thursday, May 25, 9 a.m. - noon in the Occupational Medicine Clinic. To obtain one of the 40 available appointments, send a note with your name, phone extension and building number to Mary Wood, Bldg. 490.

BROOKHAVEN BULLETIN

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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.

Farmers' Market

The Farmers' Market started again on Wednesday, May 10. As last year, the vendors will set up stalls in the shade of the Berkner Hall parking lot, where Lewis Road crosses with Johns Hopkins Street. Few vendors have produce to offer yet, but there will be jams and jellies, baked goods, flowers, and macramé, and a greater selec

Golf Outing

BNL vs. Suffolk County

At the 2nd annual BNL vs. Suffolk County golf outing last year, Suffolk County golfers walked away with the tournament's trophy and a majority of the prize money.

However, with more support from on-site golfers, relatives and friends, we can get this trophy back, say BNL's golfers. This year's outing will be held on Cherry Creek Golf Course Monday, June 12 starting at 7:30 a.m. (shotgun start). The \$75/golfer entry fee includes prizes, cart, and lunch after 18 holes of fun. There are 3 formats for the outing:

- 2 player teams using net score (3 flights)
- 4 player best ball (net)
- Suffolk County Golfers vs. Brookhaven Golfers (trophy and bragging rights).

Additional competitions will include putting, closest to the pin on par 3s, and closest to the line on #4. The outing is open to all employees, facility users, contractors, and guests. Make a date to support the Lab — before Wednesday, June 7, contact Gordon Rawn, Ext. 7095, e-mail rawn@bnl.gov.

BERA Wine Tour — Last Day to Sign Up

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

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.

League Update

• **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.

Volleyball Party — Reserve Today

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 from 6:30 to 8 p.m., 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 today, Friday, May 12. No tickets will be sold at the door.

Great Adventure Discount Tickets

Tickets for Six Flags Great Adventure are now on sale at the BERA Sales Office for the 2000 season.

The all-new Hurricane Harbor Water Adventure Park is one of the world's largest new water parks. It includes a gigantic wave pool, family activity lagoon, adventure river and more than a dozen wet, wild water slides. Six Flags still features the Great American Scream Machine, the Batman ride, the Viper, Skull Mountain, an indoor roller coaster, the Lethal Weapons water stunt show and the new Batman and Robin ride, called The Chiller.

BERA is selling Early Bird tickets, which are not available at the gate. At \$25, they include both park and safari and are good until June 25. Regular park tickets are \$42.39, and the Park/Safari combo is \$45.57 at the gate. BERA's prices are \$33 and \$35 respectively, a savings of approximately \$10 each, which includes tax and saves waiting on line.

BERA also sells children's tickets at \$22 for 48 inches tall and under, strictly enforced. Regular admission to the new Six Flags Hurricane Harbor water adventure park is \$28.61, the BERA price is \$24. This year, BERA also has \$7 meal vouchers which have a value of \$10 at the park. Children under three are free. For more information, call Andrea Dehler, Ext. 3347.

Classified Advertisements

LABORATORY RECRUITMENT - Opportunities for Laboratory Employees.

DD8588. ADMINISTRATIVE POSITION (term appointment) - Requires an AAS in accounting or business management or equivalent experience and working knowledge of Excel, Word and PowerPoint. Experience with Peoplesoft, JCARS and LCDS highly desirable. Flexibility and teamwork skills are critical. Will provide temporary support to the Business/Administrative Office of the Life Sciences Directorate. Individual will carry out special projects including account analysis and reconciliation under the direction of the Business Operations Manager and provide backup coverage for administrative staff and necessary. Medical Department.

OPEN RECRUITMENT - Opportunities for Laboratory Employees and Outside Candidates.

MK8243. SPECIAL ASSISTANT TO THE ASSOCIATE LABORATORY DIRECTOR (ALD) - Will report directly to the ALD - Energy, Environment & National Security. Requires a bachelor's/master's or Ph.D. degree in an appropriate discipline. Candidate should have previous managerial experience and possess excellent analytical and communication skills (oral and written). Will provide direct managerial and administrative support to the ALD for Energy, Environment & National Security (EENS) in the operation of the Directorate programs. Will ensure the application of DOE, BNL and other pertinent regulations, coordinate audits and reviews within the EENS Directorate, and oversee and implement corrective action plans and/or improvement initiatives. Will work on special projects; represent the ALD, as requested, at meeting and planning sessions; and acting as liaison between ALD and organizational units reporting to ALD. Will also respond to requests for information from the Laboratory, DOE and outside organizations. Director's Office.

NS7220. TOUR WORKERS (Sundays/July-August) - Requires excellent communication skills, an interest in science, and the ability to work Sundays. As part of our Sunday Tour Program, will be responsible for interacting with the public and communicating technical and scientific information. Community Relations Office.

DD8865. TECHNICAL POSITIONS - Requires a Bachelor of Technology degree in electronics or equivalent. Candidate should have experience with analog, digital and rf circuits as well as construction skills and familiarity with Programmable Logic Controllers (PLCs) and associated application configuration. Good communication skills and the ability to work in a group setting are important. Responsibilities will include testing, fabricating, designing, maintaining and repairing of rf systems for particle accelerators. Collider -Accelerator Department.