

## RHIC, AGS Users' Meeting Reflects on Past, Looks Toward Future of Nuclear Physics

Participants in the 2008 Relativistic Heavy Ion Collider (RHIC) and Alternating Gradient Synchrotron (AGS) Users' Meeting got a taste of the rich history of nuclear physics at Brookhaven, as well as a glimpse of the future directions the Lab might take in the field.

Held May 27–30, the four-day meeting featured topical science workshops, recent results, updates on future projects, a symposium on RHIC's impact on nuclear physics, an open forum to discuss users' concerns and ideas, and a panel discussion about diversity in physics.

The audience at the plenary session, held Thursday, May 29, was welcomed by RHIC & AGS Users' Executive Committee Chair (UEC) Abhay Deshpande, Stony Brook University. His remarks were followed by presentations on the latest operations and detector results from heavy-ion and polarized proton collisions and an address from past UEC Chair René Bellwied, Wayne State University. Bellwied gave a brief overview of the UEC's activities over the past year, which included involvement in establishing new cyber security and foreign national regulations, administering an on-site housing survey, making the case for the new BNL Café in the Research Support Building, and participating in congressional visits.

Steve Vigdor, Associate Laboratory Director for Nuclear & Particle Physics, filling in for

Laboratory Director Sam Aronson, then commented on BNL's strategic plan. In the 10-year map, presented to DOE in late April, the major activities set out for the Laboratory include photon sciences, collective quantum chromodynamics (QCD), energy, and physics of the universe. While detailing the individual projects for each Lab initiative, Vigdor stressed that it is important to understand that RHIC and the National Synchrotron Light Source II are not competitors, but rather "mutually supportive and both essential to the continued health of BNL."

He also noted that realizing the ambitious plan set out for the Laboratory will require science budgets consistent with the America Competes Act.

"It is critical for the scientific community to deliver a coherent, compelling message to the new Congress and administration regarding the long-term economic benefit of investments in science research and training, and of the importance of a long-term view, even in times of short-term economic crisis," he said.

The audience then heard updates from several funding

agency representatives. First, Jehanne Simon-Gillo from DOE's Office of Nuclear Physics gave an overview of the strained budget situation. Appropriation levels have fallen consistently below the amount requested for the last few years, resulting in cuts to programs like RHIC, the Continuous Electron Beam Accelerator Facility at Jefferson Lab, and the Large Hadron Collider. Therefore, obtaining funding through the fiscal year 2009 budget request (which includes a 17.9 percent increase for the Office of Nuclear Physics) is extremely important for implementing a world-class nuclear physics program, she said. With this funding, RHIC operations would be increased to a 25-week run.

see *RHIC Update* on page 2

### Plenary Speakers



**Jehanne Simon-Gillo**  
U.S. DOE, Office of Nuclear Physics



**Brad Tippens**  
U.S. DOE, Office of Nuclear Physics, Medium Energy



**Ani Aprahamian**  
National Science Foundation, Nuclear Physics Division



**Steven Vigdor**  
BNL Physics Dept.



**René Bellwied**  
Users' Executive Committee Past Chair



**Abhay Deshpande**  
Users' Executive Committee Chair

## RHIC & Its Impact On Nuclear Science

On Wednesday, May 28, the Relativistic Heavy Ion Collider (RHIC) and Alternating Gradient Synchrotron (AGS) Users' Meeting featured a special, all-day symposium entitled "RHIC & Its Impact on Nuclear Science."

The talks started with Gordon Baym of the University of Illinois, Urbana-Champaign, who gave a historical perspective of the RHIC heavy-ion program from its inception at a 1974 workshop held at Bear Mountain. There, T.D. Lee asked whether the vacuum was a medium whose properties could be changed — and suggested investigating this question by "distributing high energy or high nucleon density over a relatively large volume." Baym's talk included the first ideas about how to do this — for example, by colliding heavy ions — and early predictions about what kinds of matter such collisions might produce, including the possibility of quark matter as an "ultimate state." Well before RHIC was built, scientists were talking about potential connections with astrophysical concepts such as neutron stars, supernovae, cosmic rays, and mini black holes, and even condensed matter physics, Baym said.

One field with surprising connections to RHIC physics — string theory — was then explored in depth by Makoto Natsuume of the KEK Laboratory in Japan. The connections, he emphasized, run in both directions, with elements of string theory being useful for understanding the quark matter created at RHIC, particularly its low viscosity, and RHIC being useful for testing aspects of string theory. His appeal to heavy-ion physi-

cists: "Ask not what string theory will do for you, but what together we can do for the future of physics."

Gerry Bunce of BNL's Physics Department then gave a historical overview of the spin physics program at RHIC, emphasizing the importance of technological and theoretical advances, as well as financial investments from collaborators at the RIKEN laboratory in Japan, and the donation from Renaissance Technologies that helped fund the 2006 polarized proton run. The moral of his "fable" was that investments in technologies and ideas that predated the specific mission of investigating the proton "spin mystery" — and having adequate running time to implement, learn, and make improvements — have all been essential to the program's success.

Jacques Soffer of Temple University then elaborated on the physics results coming out of the spin program and how they relate to the problem of proton spin. He discussed the theoretical QCD underpinning for RHIC spin measurements being used to extract information on the contribution of gluons to the proton's spin, and to those planned to detect W bosons to gain

see *RHIC Impact* on page 3

Renowned  
Works from  
**RHIC**  
See page 2



## RIKEN BNL Research Center Hosts Workshop on Spectral Functions

More than 60 physicists from 27 institutions gathered for a three-day workshop held by the RIKEN BNL Research Center (RBRC) at BNL on April 23 to discuss how to use spectral functions — which measure contributions of states to correlation functions — to understand the properties of the new state of matter obtained in ultra-relativistic heavy ion collisions, particularly at BNL's Relativistic Heavy Ion

Collider. In the past two decades, one of the most important goals of the nuclear physics community has been the production and characterization of a new state of matter — quark-gluon plasma (QGP).

Said Larry McLerran, Group Leader of the RBRC Theory Group, "Perhaps the most pressing problem related to the QGP is: How perfect is the plasma? This is related to how freely it flows. One of the major aims of

this workshop was to develop better methods for understanding and computing this feature of the QGP."

Understanding how the properties of different particles — in particular, the bound state of a very heavy quark and its antiquark, known as quarkonium — change when placed in a hot medium is crucial for interpreting experimental data and extracting properties of the QGP. In-medium properties

of the different particle species and the transport properties of the medium are encoded in spectral functions. The former could yield important signatures of deconfinement and chiral symmetry restoration at high temperatures and densities, while the latter are crucial for the understanding of the dynamics of ultra-relativistic heavy ion collisions.

Participants at the workshop are experts in various areas of

spectral function studies. The workshop encouraged direct exchange of scientific information among experts, as well as between the younger and the more established scientists. The workshop's success is evident from the coherent picture that developed of the current understanding of transport properties and in-medium particle properties.

More information is available at <http://www.bnl.gov/riken/qgp>.

## CALENDAR

### OF LABORATORY EVENTS

- The BERA Store in Berkner Hall is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347, or Christine Carter, Ext. 2873.
- Additional information for Hospitality Committee events may be found at the Lollipop House and the laundry in the apartment area.
- The Recreation Building #317 (Rec. Hall) is located in the apartment area.
- Contact names are provided for most events for more information.
- Events flagged with an asterisk (\*) have an accompanying story in this week's Bulletin.

### — EACH WEEK —

#### Weekdays: Free English for Speakers Of Other Languages Classes

Beginner, Intermediate, Advanced classes, various times. All are welcome. Learn English, make friends. See [www.bnl.gov/esol/schedule.html](http://www.bnl.gov/esol/schedule.html) for schedule. Jen Lynch, Ext. 4894

**Mondays: BNL Social & Cultural Club**  
Noon-1 p.m., Brookhaven Center, South Room, free beginners dance lessons. Rudy Alforque, Ext. 4733, [alforque@bnl.gov](mailto:alforque@bnl.gov)

**Mondays & Wednesdays: Pilates**  
5:15-6:15 p.m. Rec. Hall. Ext. 5090

**Mondays & Thursdays: Kickboxing**  
\$5 per class. Noon-1 p.m. in the gym. Registration is required. Ext. 8481

**Mon., Thurs., & Fri.: Tai Chi**  
Noon-1 p.m., B'aven Cntr N. Rm. Adam Rusek, Ext. 5830, [rusek@bnl.gov](mailto:rusek@bnl.gov)

**Tuesdays: Hospitality Coffee**  
10:30 a.m.-noon, Rec. Hall lounge. All welcome. Ext. 5090

**Tuesdays: BNL Music Club**  
Noon, B'aven Center, N. Room. Come hear live music. Joe Vignola, Ext. 3846

**Tuesdays: Knitting Class**  
2 p.m. Rec. Hall. All levels of skill. Ext. 5090 for information.

**Tuesdays: Jiu Jitsu**  
6:30-7:30 p.m. Gym. All ages, 6 yrs. to adult. \$10/class, pay as you go. Tom Baldwin, Bldg. 452, Ext. 4556

**Tuesdays: Toastmasters**  
1st & 3rd Tuesday of month, 5:30 p.m., Bldg. 463, Rm 160. Guests, visitors welcome. [www.bnl.gov/bera/activities/toastmasters/](http://www.bnl.gov/bera/activities/toastmasters/)

**Tue., Wed. & Thu: Rec Hall Activities**  
5:30-9:30 p.m. General activities, TV, ping pong, chess, games, socializing. Christine Carter, Ext. 5090

**Tue., Thurs. & Fri.: Ving Tsun Kung Fu**  
Noon-1 p.m., B'aven Center, North Room. Taught by Master William Moy. Scott Bradley, Ext. 5745, [bradley@bnl.gov](mailto:bradley@bnl.gov)

**Tuesday & Thursday: Aerobic Fitness**  
5:15 p.m., Rec. Hall. 10 classes for \$40 or \$5 per class. Pat Flood, Ext. 7866, [flood@bnl.gov](mailto:flood@bnl.gov)

**Tuesday & Thursday: Aqua Aerobics**  
5:30-6:30 p.m., Pool. Ext. 5090

**Wednesdays: On-Site Play Group**  
10 a.m.-noon. Rec. Hall. Infant/toddler drop-in event. Parents meet while children play. Petra Adams, 821-9238

**Wednesdays: Ballroom Dance Class**  
B'aven Center, N. Ballroom. Instructor: Giny Rae. Starts September 12 and 19. Ext. 3845

**Wednesdays: Weight Watchers**  
Noon-1 p.m. Michael Thorn, Ext. 8612

**Wednesdays: Yoga**  
Noon-1 p.m., B'aven Center. Free. Ila Campbell, Ext. 2206, [ila@bnl.gov](mailto:ila@bnl.gov)

**Wednesdays: LabVIEW**  
1:30-3 p.m., Bldg. 515, 2nd fl. Seminar Rm. Free technical assistance from LabVIEW consultants. Ext. 5304

**Thursdays: BNL Cyclotrons Club**  
Noon-1 p.m., First Thurs. of month. Berkner, Rm. D. Toni Hoffman, Ext. 5257

**Thursdays: Reiki Healing Class**  
Noon-1 p.m., Call for location. Nicole Bernholz, Ext. 2027

**Fridays: Family Swim Night**  
5-8 p.m. BNL Pool. \$5 per family

**Fridays: Family Gym Night**  
5-8 p.m. Family gym activities. Free

**Fridays: BNL Social & Cultural Club**  
Noon-1 p.m., B'aven Center, S. Room, free beginners dance lessons. 7-11:30 p.m. N. Ballroom, Dance Social, workshops. Rudy Alforque, Ext. 4733, [alforque@bnl.gov](mailto:alforque@bnl.gov)

## CIGNA Representative

A CIGNA Healthcare representative is available as needed in Human Resources, Bldg. 400, or by phone to assist with claims issues you have been unable to resolve yourself through CIGNA's Customer Service number (1-800-CIGNA24). Mary Beth Kivlen will be available by appointment only. You will need to provide all pertinent documentation. To schedule, call the Benefits Office, Ext. 5126.



Roger Stoutenburgh 03610408

## Introducing the Brookhaven Council

The Brookhaven Council is an elected body that advises the Director on matters affecting the scientific staff. The Council is particularly concerned with maintaining an atmosphere conducive to excellence in scientific research at the Laboratory. The Council is also a group through which members of the scientific staff may bring their concerns to the Director's atten-

tion. This year, Christopher Homes of the Physics Department is serving as Council Chair and Sergei Lymar of the Chemistry Department is serving as Council Secretary.

Said Homes, "The Council endeavors to provide the Director with advice that fosters an environment for excellent science. To help with this goal, the Council encourages scientists to

communicate problems they may encounter to their departmental representatives on Council. While the Council provides advice on a wide spectrum of issues, one of the most important functions of the Council is to evaluate and provide recommendations to the Director on tenure promotions within the scientific staff."

### BSA Noon Recital, 6/25

Participants in Pianofest, a summer workshop held in the Hamptons, will showcase two recitals at BNL, on Wednesday, June 25, and Wednesday, July 23, at noon in Berkner Hall. Sponsored by Brookhaven Science Associates, the company that manages the Lab, the concerts are free and open to the public. All visitors to the Lab age 16 and over must bring a photo I.D.

Pianofest emphasizes the development of style and interpretation in piano performance for students of considerable technical capability.

For more information on Pianofest go to: [www.pianofest.com/](http://www.pianofest.com/).

## RHIC White Papers Reach 'Renowned' Status

Fresh evidence of the impact of RHIC physics: The "white papers" published by the STAR and PHENIX collaborations in 2005 have each reached "renowned" status on the SPIRES electronic database of particle physics publications. That means these papers — which together with papers from BRAHMS and PHOBOS that described the "perfect" liquid discovered at RHIC — have each received more than 500 citations in other published papers listed on the site.

The PHENIX and STAR white papers now have the 7th and

8th largest number of citations of all nuclear physics experimental papers tracked on the SPIRES site. The PHOBOS and BRAHMS white papers are at 12th and 13th place, respectively. In fact, 15 of the 29 most-cited papers are from RHIC.

"This is significant evidence that nuclear physicists look to RHIC as the definitive source in the field, and that our findings have triggered huge interest and enormously productive research here and elsewhere since 2005," said Steve Vigdor, Brookhaven's Associate Laboratory Director for Nuclear and Particle Physics, who oversees

The Brookhaven Council is composed of: (seated, from left) David Morrison, Physics Department; Daniel van der Lelie, Biology Department; Council Chair Christopher Homes, Condensed Matter Physics & Materials Science Department (CMPMS); Pavel Rehak, Instrumentation Division; and Council Secretary Sergei Lymar, Chemistry Department; (standing, from left) Vivian Stojanoff, National Synchrotron Light Source Department (NSLS); Raju Venugopalan, Physics; John Tranquada, CMPMS; Robert McGraw, Environmental Sciences Department (ESD); William Morse, Physics; Arokiasamy Francis, ESD; Jean Logan, Medical Department; Trevor Sears, Chemistry; Zhong Zhong, NSLS. Missing from the picture are: Robert Bari, Energy Sciences & Technology Department; Wolfram Fischer, Collider-Accelerator Department (C-AD); Vladimir Litvinenko, C-AD; and Subramanyam Swaminathan, Biology.

the RHIC program. "The white papers contain a comprehensive summary of the data collected during RHIC's first three years, their interpretation and discoveries revealed, and the open questions they raised. Obviously, the wider nuclear physics community has found them to be extremely useful and stimulating," he added.

Maintained by the Stanford Linear Accelerator Center (SLAC) since the late 1960s, SPIRES ([www.slac.stanford.edu/spires/](http://www.slac.stanford.edu/spires/)) became the first website in North America in 1991, and now attracts some 50,000 searches per day.



Roger Stoutenburgh 04830508

### RHIC Update from page 1

Simon-Gillo also talked about the transfer of the Isotope Production Program from the Office of Nuclear Energy to the Office of Nuclear Physics, which, because of its value to the medical community, should be viewed as a great opportunity for communicating scientific need.

"We've been told many times that nuclear physics has difficulty with staffers, administration, and the general public in articulating the significance we have on life and on society," she said. "The isotope program is a simple and clean case. It clearly tells a story about how nuclear physics plays a very important role for society."

Next, Brad Tippens, also from the Office of Nuclear Physics, offered perspective from the medium energy program, which includes three major scientific aspects: QCD with electron beams, QCD with proton beams, and precision measurements. Tippens echoed the budgetary concerns of Simon-Gillo, pointing out that fund-

ing for medium energy nuclear physics has been flat in recent years, with no adjustment for increases in the cost of living.

"The '09 funding situation will be bleak if we have a long continuing resolution," he said, adding that despite the factors stacked against the community, "hope springs eternal."

Ani Aprahamian, program director at the Nuclear Physics Division of the National Science Foundation (NSF), told the audience that NSF physics funding would receive an 18.8 percent increase through the President's request for 2009. Much of that increase would be used to restore funding to the National Superconducting Cyclotron Laboratory, at Michigan State University, as well as for research and education grants.

Aprahamian advised scientists to spread news of their work by sending abstracts to be added to NSF Research Highlights, either online or internally. She also gave NSF deadlines for proposals for new scientific initiatives, and provided an update on one

of the NSF's top priorities — the Deep Underground Science & Engineering Laboratory, which is expected to start up in 2012.

Also during the afternoon session, Vigdor announced the winners of this year's RHIC & AGS Thesis Award Competition, held each year to recognize outstanding theses related to research conducted at RHIC, AGS, NASA Space Radiation Laboratory, Tandem, or Accelerator Test Facility.

Although two awards are usually given, this year the judges requested and received additional funds from Brookhaven Science Associates to recognize three theses that were "clearly outstanding," Vigdor said. The winners, who each received a certificate and a \$3,000 cash award, are:

Sarah Blyth, University of Capetown, who used the STAR detector to measure phi-mesons to probe the medium created in gold-gold collisions at RHIC. The judges were particularly impressed with the innovative approach Blyth used to extract the data from the very challenging high charge multiplicity envi-

ronment of the STAR time projection chamber, Vigdor said.

Alan Dion, Stony Brook University, who used the PHENIX detector to measure energy loss and flow of heavy quarks in gold-gold collisions. Dion ended up with a striking and unexpected result, and his measurements made possible a direct extraction of the viscosity to entropy density ratio for the "perfect" liquid found at RHIC.

Benji Lewis, University of New Mexico, who was a participant in AGS experiment 949, which searched for a rare kaon decay that is an important test of the Standard Model but challenging to measure. Lewis found a number of programming errors and improved the analysis procedures. The judges were very impressed with the breadth of his work, which included all stages of the experiment, Vigdor said.

Awards also were given for the poster session winners — Shusu Shi, Institute of Particle Physics, and Tai Sakuma, Massachusetts Institute of Technology.

— Kendra Snyder

## Attn. BNers: Audits to Take Place 6/16–20 Safety & Health & Environmental Management Systems

Message from Pat Williams, Manager, Safety & Health Services Division, [pw@bnl.gov](mailto:pw@bnl.gov), and George Goode, Manager, Environmental & Waste Management Services Division, [goode@bnl.gov](mailto:goode@bnl.gov)

As a reminder, the combined Environmental Management System and Occupational Safety & Health external audits will take place the week of June 16–20. While the auditors will not interview all employees, all are expected to know that BNL has an Environmental, Safety, Security, and Health Policy. This policy is posted throughout the Lab and is available on the web at [www.bnl.gov/eshq/files/pdf/ESSH\\_policy-9-6\\_hi.pdf](http://www.bnl.gov/eshq/files/pdf/ESSH_policy-9-6_hi.pdf) (pdf).

Also, all employees must be familiar with the environmental, safety, and health aspects of their work, all hazards associated with that work, and the consequences that could result from performing work outside of established controls.

Our continued certification to the ISO14001 and OHSAS18001 institutional standards adds value to the Lab by ensuring risks are appropriately managed and

processes are in place for continual improvement.

The following organizations will be audited: Lab Level Program; Facilities & Operations Directorate; Environmental, Safety & Health Directorate; Community, Education, Government & Public Affairs Directorate; Energy, Environment & National Security Directorate; Basic Energy Sciences Directorate; and Life Sciences Directorate.

### Contacts for questions on Environmental Management System:

- George Goode, Ext. 4549
- John Selva, Ext. 8611
- Your EMS Representative
- Your Environmental Compliance Representative

### Contacts for questions on Occupational Safety & Health Management System:

- Pat Williams, Ext. 8211
- Bob Selvey, Ext. 3066
- Your OSH Representative
- Your Safety & Health Representative

### EMS/OSH Management Representatives:

Labwide: George Goode, Ext. 4549; C-AD & SMD: Ed Lessard, Ext. 4250; Physics: Ron Gill, Ext. 3987; IO: Robert DiNardo, Ext. 4204; Life Sciences: Ann Emrick, Ext. 5756; NSLS: Andrew Ackerman, Ext. 5431; NSLS-II: William Casey, Ext. 4654; BES: John Taylor, Ext. 7005; EENS: Linda Bowerman, Ext. 4265, and Patricia Carr, Ext. 7192; F&O: William Chaloupka, Ext. 7136, and Raymond Costa, Ext. 8227; ESH: Anna Bou, Ext. 5140, and Robert Selvey, Ext. 3066; and EM: Mark Davis, Ext. 2165.

### Environmental Compliance Representatives (ECRS):

BES, NSLS: Deborah Bauer, Ext. 5664; Med, Bio, EENS: Joy Adams, Ext. 7898; C-AD, SMD, IO, PO: Melvin VanEssendelft, Ext., 2905; F&O: Steve Ferrone, Ext. 5531; ESH, PPM, Director's Office: Anna Bou, Ext. 5140.

### Defensive Driving Course In Two Parts, 6/23 & 26

The six-hour Defensive Driving (Point & Insurance Reduction) course will be held in two parts on Monday and Thursday, June 23 and 26, in the Brookhaven Center, 6 p.m.-9:15 p.m. It is open to BNL, BSA, and DOE employees, facility-users, and their families. The cost is \$38 per person. Preregistration is required. To register, call Ed Sierra, 821-1013, and leave a message. Include your phone number. For more information, call Sarah Wiley, Ext. 4207.

### Give Life — Give Blood Blood Drive, 6/17 & 18

BNL will hold a Blood Drive on Tuesday and Wednesday, June 17 and 18, 9:30 a.m. – 3 p.m. in the Brookhaven Center. Donors must be 16 to 75 years of age, in good health and weighing over 110 lbs. Restrictions may apply to individuals from the UK and Europe. Donors should have photo ID and know their social security number. To make an appointment, log on to the Human Resources webpage, click on “Blood Drive” and select “Schedule an Appointment.” For more information, call Liz Gilbert, Ext. 2315.

### Honoring Flag Day, 6/13

Flag Day, June 14, is set aside by an act of Congress to honor the birth of a precious national symbol of the U.S. One portion of flag etiquette states: “When a flag is so worn that it is no longer fit to serve as a symbol of our country, it should be destroyed in a dignified manner.”

Today, in honor of Flag Day, the Brookhaven Veterans Association (BVA) will collect American Flags that are too worn. If you have a flag that falls into this category, bring it to Berkner Hall today, Friday, June 13, 11 a.m. -1 p.m., to be collected for proper disposal.

The BVA, a BERA organization, is dedicated to serving the interests of BNL veterans and employees who are faced with the challenges of their loved ones currently serving in the military, and to their communities. For more information, go to: [www.bnl.gov/bera/activities/va/default.asp](http://www.bnl.gov/bera/activities/va/default.asp).

Speakers, organizers at the RHIC Symposium include: (back, from left) Berndt Mueller, Duke University; Jacques Soffer, Temple University; Barbara Jacak, Stony Brook University (SBU); William Zajc, Columbia University; Makoto Natsuume, KEK, Japan; and Gordon Baym, University of Illinois at Urbana-Champaign; (front, from left) Thomas Roser, BNL; Gerry Bunce, BNL; Jamie Nagle, University of Colorado; Steve Vigdor, BNL; Abhay Deshpande, SBU. Missing, Bernd Surrow, Massachusetts Institute of Technology.

ble with stochastic cooling — to be completed as early as 2012; 2) between 2016 and 2021, an upgrade project such as the first stage of an electron ion collider, or a large improvement in proton collision luminosity fueled by an innovative beam cooling technique, or AGS precision experiments; and 3) implementation of a full-capability electron ion collider (eRHIC), which would start producing collisions in the 2020s.

Vigdor also stressed the value of Brookhaven’s involvement in what he calls the “physics of the universe,” experiments like ATLAS at the LHC in Switzerland, neutrino oscillation experiments at the Daya Bay reactor in China and subsequently utilizing a beam produced at Fermilab and directed toward a huge detector in the Homestake Mine in South Dakota, and the Large Synoptic Survey Telescope in Chile.

“It’s important for the future of RHIC to maintain a healthy program in particle physics,” he said. — Karen McNulty Walsh

### LIANS Dinner Meeting, 6/19 Speaker: Paul Grannis on Particle Accelerators

The next meeting of the Long Island Chapter of the American Nuclear Society (LIANS) will be held on Thursday, June 19, when Paul Grannis will talk on “Particle Accelerators: Herding and Hurrying Cats.” On the faculty at Stony Brook University for 40 years, Grannis has conducted experiments in particle physics at accelerators around the world. For over a decade he led the DZero experiment at the Fermilab proton antiproton collider. He is a winner of the American Physical Society’s Panofsky Prize. The meeting will be held at the South Shore Restaurant, Rte. 112, Patchogue. Complimentary appetizers/cash bar will start at 6 p.m., dinner at 7 p.m., and Grannis’s talk at 8 p.m. The cost is \$25/person. Reserve by Monday, June 11, leaving a message with Arnie Aronson, Ext. 2606.



**RHIC Impact** from page 1 access to the polarization of antiquarks in the so-called “sea” inside the proton.

The afternoon session began with Thomas Roser of Brookhaven’s Collider Accelerator Department, who gave an overview of RHIC’s accelerator achievements, including dramatic improvements in luminosity for both the heavy-ion and spin programs. He then described planned upgrades to further improve luminosity as well as the addition of an electron beam ion source (EBIS) and an electron ion collider (eRHIC), which would allow collisions with new species of heavy ions and electrons, respectively, as well as ways of using lower-energy electron beams to further improve overall luminosity.

Theorist Berndt Mueller of Duke University then gave his perspective of how RHIC is moving from the discovery phase to “precision” science studies of the properties of quark-gluon matter, including many features

that theorists are predicting with newly refined techniques and that experimentalists can explore. He described the experimental and theoretical surprises already found at RHIC as “a gold mine.” Extracting the gold, he said, will require sustained collaboration among theorists and experimentalists on precision data acquisition and interpretation.

Jamie Nagle of the University of Colorado continued this theme by discussing some key heavy-ion findings and specific matter properties yet to be explored. In view of the Large Hadron Collider (LHC) coming online, Nagle suggested there would be exciting competition. Similar competition among the four experimental collaborations at RHIC has resulted in high-quality physics, he said, suggesting that competition with LHC would do the same. With improved luminosity reducing error bars on critical measurements at RHIC, and new results coming out of the LHC, the next decade promises

to be a “golden age of heavy ions,” Nagle said, with an excited young community eager to pursue the science.

Bernd Surrow of the Massachusetts Institute of Technology gave a similarly enthusiastic talk about the future of the polarized proton program at RHIC. He emphasized the considerable constraints RHIC data have already placed on the gluon contribution to proton spin, and discussed the plan to improve those constraints and add new ones for antiquark polarization, with more extensive data anticipated over the coming several years. In addition, Surrow discussed what is being learned and planned for measurements of transverse spin sensitivities at RHIC.

Steve Vigdor, Associate Laboratory Director for Nuclear & Particle Physics, wrapped up the symposium with an outlook on the future of RHIC. He described the three stages of the long-range plan for nuclear physics at the Lab, which are: 1) a luminosity upgrade enabling RHIC-II science — made possi-

## CALENDAR — THIS WEEKEND —

Friday, 6/13

**Guide Dog Training on Site**  
10 a.m.-1 p.m. In area of Bldg. 400, Firehouse, Berkner Hall. The Guide Dog Foundation will bring about 15 guide dogs for specialized training on site that will include a siren’s being sounded. See p. 4.

— WEEK OF 6/16 —

Tues. & Wed., 6/17 & 18

**\*Blood Drive**  
9:30 a.m.-3 p.m. B’haven Center. Donors must be 16 to 75 years of age, in good health, and weighing over 110 lbs. Donors should have photo ID and know their social security number. See also notice above left for more information. To make an appointment, log on to the Human Resources webpage, click on “Blood Drive” and select “Schedule an Appointment.” Or, contact Liz Gilbert, Ext. 2315.

**RAFFLE:** A free raffle will be held among blood donors, on Wednesday, June 18, 4 p.m. 1st Prize: Two tickets to any BERA trip or event, 2nd prize: BNL spring jacket, 3rd: BNL sweat-shirt, 4th: 2 movie tickets.

Friday, 6/20

**Employee Lunchtime Tour**  
Noon. Berkner Hall Upper Lobby. All the Lab community is welcome to meet the group to be taken to the Water Treatment Plant, where Bill Chaloupka will explain the Lab’s water treatment systems. Participants will be returned to Berkner by 1 p.m. For more information, contact Elaine Lowenstein, Community Relations, Ext. 2400.

— WEEK OF 6/23 —

Monday, 6/23

**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 nominations for union president and officers.

**\*Defensive Driving, Part I**  
6-9:15 p.m. Brookhaven Center, South Room. Part I of a two-part course. Part II will be on Thursday, 6/26, same time, same place. See notice, above, left.

Wednesday, 6/25

**\*BSA Noon Recital: Pianofest**  
Noon. Berkner Hall. Pianofest, a summer workshop for talented pianists, will showcase a recital, sponsored by Brookhaven Science Associates, the company that manages the Lab. The concert is free and open to the public. All visitors to the Lab age 16 and over must bring a photo I.D.

437th Brookhaven Lecture

4 p.m. Berkner Hall. Michael Rosenthal, Nonproliferation & National Security Department, will talk on “Strengthening International Atomic Energy Agency Safeguards: Challenges Ahead.” All are welcome to this free lecture, open to the public. All visitors to the Lab age 16 and over must bring a photo I.D.

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

## Arrivals & Departures

— Arrivals —

John Gosman ..... NSLS  
Patricia Gregory ..... Fiscal  
Zhening Zhang ..... Biology

— Departures —

Benjamin Pucci ..... C-AD

