# Particle Post April 2012

"Knowledge comes, but wisdom lingers." *Tennyson*

Previous issues October 2004 GO

## Note from the Chair Thomas Roser

RHIC is running with record luminosity and polarization at the collision energy of 510 GeV and we will be able to end this part of our run a little earlier. Together with a significant rebate on our electric power bill this will allow us to fit in both a run with uranium collisions and a run with collisions of copper on gold before the end of the run on June 25. We will start with uranium on uranium collisions with uranium beams from the new EBIS pre-injector. Preparation work has already started and first uranium beam has been accelerated in the AGS.

## Administration Stephanie LaMontagne-McKeon

In summary, *we work in interesting times.* DOE funds for RHIC Operations are flat for a third consecutive year and are likely to remain so for another year. NASA, too, has had to tighten their belts and funding for NSRL operations is ~10% below last year.

Despite this, we have been able to maintain a reasonable experimental program. In the current year, lower than projected power cost will enable us to extend the planned 20 week run to 23 weeks and a 15 week RHIC run is planned for FY 2013.

Several factors have contributed to our success in managing such severely constrained budgets. As mentioned above, lower than projected power cost has made a substantial difference. Another significant factor is the voluntary separation program announced earlier this fiscal year which reduced C-AD staff by ~ 10 FTE's and current year cost by ~$2.0M. Additionally, the DOE imposed two-year wage freeze has dramatically slowed growth in salary expense, providing savings of ~$2.5M annually.

The initiative of several staff members has also helped by providing additional funding to pursue the scientific interests of our R&D and facility operations staff. The Office of Naval Research provided $1M in support of ERL, bringing their total contribution to ERL to $6M over the past five year period. Funding of nearly $6M over two years will be provided by Best Medical for R&D related to the design of a medical synchrotron and the National Reconnaissance Office provided $700K for beam use at NSRL.

Turning from financial to administrative matters, please be advised that PPM personnel are in the process of collecting location data using hand held bar code readers for BNL's biannual capital equipment inventory. In May, Paul Sparrow will be kicking off the annual inventory of Special Process Spares.

## Accelerator Division Wolfram Fischer

**The 100 GeV portion of the RHIC polarized proton Run-12 ended very successfully on 3 March. The delivered integrated luminosity was very close to the maximum projected, and the polarization a little higher than in 2009, when we ran this mode the last time. The system reliability was excellent with the highest "time-in-store" ratio of all high-energy runs so far. The transition to the 255 GeV part of the run was also very smooth with only 3.5 days until going into physics mode. The integrated luminosity is now ahead of even the optimistic projection, and the polarization also higher than last year. Vincent Schoefer, the Run Coordinator, and the whole team really did an outstanding job. This year we are seeing the results of all the development effort during last years' polarized proton run, which were obtained under difficult conditions due to the unusually high failure rate in Run-11. Now we also need to make sure that we are prepared for next year, when we plan to commission a new source and the electron lenses. Both devices will allow for higher beam intensity.**

**The polarized proton run will end 19 April, when we switch to uranium-uranium operation, the first time such an ion is used in a collider. This will be followed by copper-gold collision, also a combination that never ran in a collider. Yun Luo will take over as the Run Coordinator for ions. We are likely to run until the end of June.**

**BLIP operation was interrupted and a window needed repair. BLIP is running again since 24 March, while NSRL is operating without problems.**

## Experimental Support & Facilities Division Phil Pile

**The PHENIX and STAR experiments are into their fourth week of physics with 255 GeV on 255 GeV polarized protons. The integrated luminosity has been following well above our "maximum" luminosity with projections beam polarization on average above 50%. The STAR experiment is on track to far exceed goals set for this run while the PHENIX experiment will be closer to just reaching its set goals. This part of the RHIC run will end on Thursday, 19 April and we'll make the switch to 96 GeV/n on 96/n GeV uranium beams for about 2-3 weeks of physics then on to 100 GeV/n on 100 GeV/n copper-gold. The heavy ion part of this run will make use of the new Electron Beam Ion Source (EBIS) for the first time. The uranium beams would in fact not be possible without the EBIS. The schedule for heavy ion part of this run should be regarded as tentative at this point. The AnDY experiment was reviewed at the end of last month – formal results of the review are pending.**

**NSRL is well into its spring run (NSRL-12A). The spring run will end on 4 May and after a 1 week break begin again as NSRL-12B scheduled to run through June. The National Reconnaissance Office (NRO) experiments that ran in March for a week will continue during the 1 week NSRL break in May and again in July once NSRL-12B is complete. The NSRL experiments will make use of beams from the EBIS when available and otherwise will take beams from the Tandems. NASA is making plans for a test later this year of using low energy beams direct from the Tandem for radiobiology experiments. If successful, this could result in a new user for the Tandem accelerators.**

**The BLIP facility continues after recovery from a window failure. The present plan is to run the Linac for BLIP through about the third week in July.**

## Accelerator R&D Division Ilan Ben-Zvi

**The 56 MHz cavity is at the BNL-AES niobium chemistry facility at AES where it is undergoing its first Buffered Chemical Polishing. The clean room final touches are being made and it will be ready to accept the cavity when it comes and carry out a vacuum bake.**

**The eRHIC cost estimate first round has been completed. Internal meetings with all groups are taking place for scrubbing the cost estimates.**

**The Coherent Electron Cooling proof of principle experiment's lattice has been defined. The superconducting 112 MHz RF gun is being fitted to a new cryomodule at Niowave Inc. in Michigan, and the Statement of Work for the superconducting 5-cell accelerating cavity has been placed with procurement.**

**The ERL horseshoe movable magnet arc is surveyed, in place and assembly of vacuum and instrumentation components is taking place.**

**The ERL gun is mounted on its stand in the ERL enclosure.**

**It is worth pointing out that this superconducting RF gun is unique in terms of its technology, beam energy and beam current capability and we should all be proud of having this advanced technology and science element in our department.**

## Operations Paul Sampson

**CAD continues to run on many different fronts in April. Following an extremely successful 200GeV mc run, the setup for the 510Gev cm run went very smoothly. At present the ruin is well under way and is producing exceptional luminosities.**

**Accelerator Studies (APEX) and Maintenance periods continue on Wednesdays, with weekly APEX and bi-weekly Maintenance. Injector development continues behind stores and when possible on Maintenance Days. Setup for Gold and Uranium from the EBIS source is ongoing as is work on improvement to Polarized Proton beams. Much of the focus has been on increased intensity in the AGS for gold beam and acceleration of uranium to RHIC injection energy (which has been achieved).**

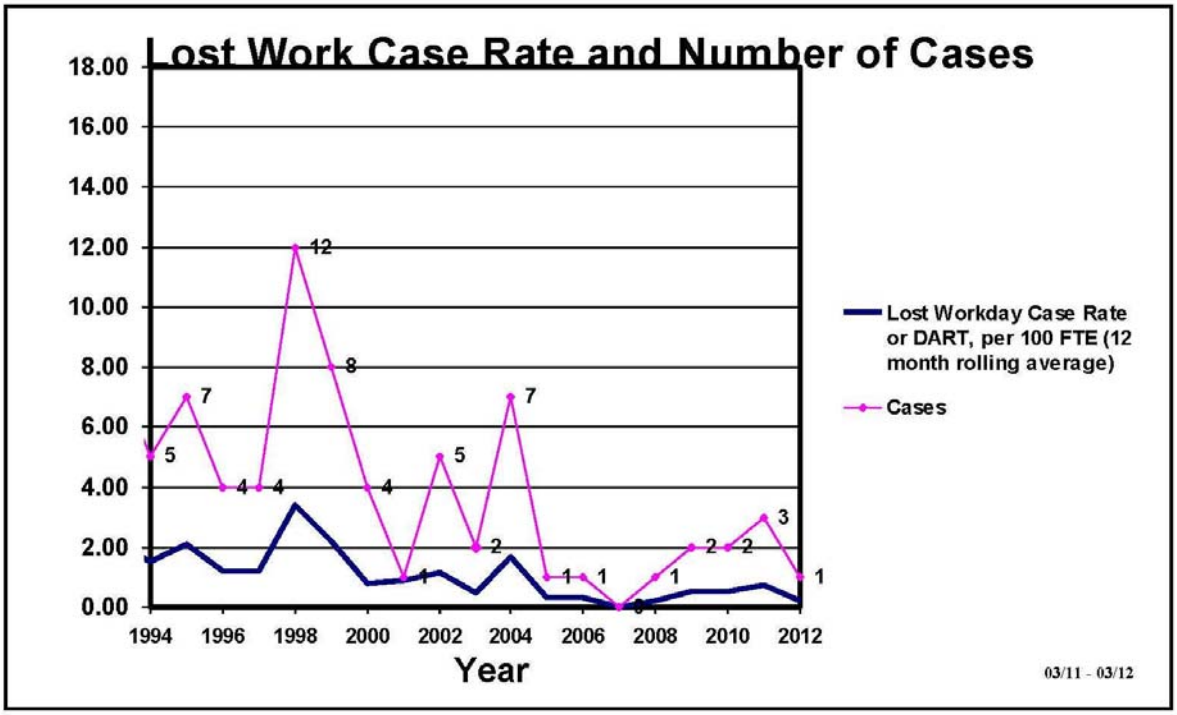
**Setup and testing of equipment for RF, Stochastic Cooling, Spin-flipper and e-lens systems is progressing, with much of the installation occurring during the Maintenance Days.**

**NSRL run 12a has continues with ions provided from both EBIS and Tandem and protons from the LINAC. Many different species from EBIS have been successfully injected and accelerated in the Booster including Tantalum, Krypton, Uranium and Gold. Several of these species have been extracted to the AGS for setup or to the NSRL target room for experimental users.**

**LINAC continues to run Polarized Protons for RHIC, protons for NSRL and High Intensity Protons for BLIP. BLIP is running at near nominal intensity following a beam-line failure, which caused nearly a week of down time.**

**For updates on the weekly schedule see: This Week**

## *Safety Stats*




**C-AD Occupational Injury Statistics**

| | For Year 2011 | For Year* 2012 |
|---|---|---|
| First Aid Cases | 4 | 2 |
| Recordable Cases | 3 | 0 |
| Lost Work Cases | 3 | 0 |

* Calendar Year through 3/12

**REMINDER: TLD exchange is done the *FIRST* FRIDAY of the Month.**

**EXCHANGE DATE: FRIDAY, May 4, 2012**

***Pete Cirniglario***

## ARRIVALS

**Zavier Buffat joined the department on April 2 as a Research Collaborator working with Wolfram Fischer in the Accelerator Physics Group.**

**Frederic Desforges joined the department on March 26 as a Research Collaborator working with Francois Meot in the Accelerator Physics Group.**

**Zhe Duan joined the department on April 2 as a Research Collaborator working with Mei Bei in the Accelerator Physics Group.**

**Erdong Wang became a full time employee on March 19, working with Ilan Ben-Zvi in the Accelerator R&D Division.**

## WELCOME!

## TRANSFER

**Ryan Craig, Machine Operations Group transferred to Photon Sciences effective February 20.**

## DEPARTURE

**Kotaro Kondo, Preinjector Systems Group will be leaving on April 19.**

## GOOD LUCK!

**Inside RHIC. Please click on link to the left to view the latest web publication of Inside RHIC.**

*We wish all of you born in **April***
*a happy and healthy year ahead.*
***Birthday people ONLY click on cake***

**Do You Have Any Recent or Upcoming Graduates? If so, please let me know and I will include in our newsletter.**

# DID YOU KNOW

**From: Karol, Raymond C**
**Subject: Suggested 5 minute safety topics**

2. **Visit this website for Safety at Home Tips:**

   **http://www.safetyathome.com/home-safety/**

# 3. ASSE Transportation Group Concerned About Distracted Driving, Offer New Resources, Tips for April's Distracted Driving Awareness Month

**March 29, 2012**

**Des Plaines, IL - Members of the American Society of Safety Engineers (ASSE) say that distracted driving can lead to harrowing life changing events and warns drivers to pay attention to the road as part of April's Distracted Driving Awareness Month. ASSE's Transportation Practice Specialty (TPS) group wants drivers to realize that their vehicle is a machine weighing anywhere from 3,000 pounds and up and can cause major damage especially if it crashing while traveling at speeds of 40 miles or more per hour, for instance. The ASSE TPS has developed a 'How to Avoid Distracted Driving' tip sheet discussing crash force, distraction events, distance traveled in seconds and more available at http://www.asse.org/newsroom/safetytips/distracteddriving.php.**

**Statistics show that 500,000 people are injured each year and another 6,000 are killed by drivers who are distracted, particularly by their phone. Young drivers are more likely to be killed in distraction-related crashes, according to the U.S. Department of Transportation (DOT). In addition, a recent Governor's Highway Safety Association (GHSA) report found an increase in teen driver roadway crash fatalities in the first six months of 2011, illustrating a need to increase awareness about the dangers of distracted driving especially for teens. Noting the increase in injuries, ASSE chapters will also be discussing the topic at meetings.**

**"We are very concerned as roadway crashes continue to be the number one cause of on-the-job deaths," ASSE President Terrie S. Norris, CSP, ARM, CSPI, said today. "Life can change in a second. Consider this — you're doing yard work one warm spring day and your, let's say, mother decides to go to the store to get some garlic bread to go with the spaghetti being made for dinner. While still in the yard you hear a car pulling into the driveway and think your mother has returned from shopping. But, as you lift your head you see it's a police car instead. The policeman slowly gets out of the car and tells you the bad news – your mother died when the driver of another car, while texting, veered into the wrong lane and slammed into her car. She died instantly, he says.**

**"In the span of about one hour you went from gardening, joking with your mother to being told she is dead. Then you have to tell the bad news to your family and friends. So instead of enjoying a spring spaghetti dinner that night, you and your family are planning a funeral," Norris said. "This happens several times a day around the world and the pain of such an incident lasts forever. Roadway crashes, fatalities and injuries caused by distracted drivers must stop now."**

**The ASSE TPS group works daily on transportation safety protecting their employees by developing and implementing driver safety programs as well as commercial vehicle safety maintenance programs. Most work for companies that have long standing 'driver safety' company policies which include banning in-vehicle cell phone use and other distracted driving activities.**

**"It's not just happening in the U.S., distracted driving is a major international problem," ASSE TPS Administrator Nancy Bendickson said. "ASSE members have noted that companies in some countries have strict driving rules while on company property, but once off that property the employees are prone to a greater risk of being in a roadway crash. One international company official said last year several of their employees were killed in car accidents after leaving the workplace to return home."**

**ASSE TPS members Earnest F. Harper, CSP, DABFE, DABFET, CFC, of Idaho, and Timothy C. Healey, of Connecticut, note that people should realize there are clear physical dynamics involved that can be dangerous when one is operating a large machine like a car and take their eyes off the wheel, even for a few seconds.**

**"At 40 mph you are traveling 58.7 feet-per-second (fps) meaning that in the 2.9 seconds it takes for that eye glance, looking away from the road ahead, to reach for something you will have traveled 170 feet (58.7fps x 2.9s). At 60 mph, you**

**are moving at 88 fps," Harper noted. "During that 2.9 second glance away from what you are driving into, you have traveled over 255 feet."**

**"In either case, at these common speeds, each is more than enough time to end up being several feet under that slow moving tractor-trailer rig ahead of you that you didn't see," Healey noted. "And in a 40 mph crash a 100 pound person or child who isn't wearing a seat belt will hit the dash board with a force of 2.6 tons, and a 3,000 pound car crashing at 40 mph will experience a crash force of 80.28 tons reducing any chance of surviving."**

**The Transportation Practice Specialty group suggests to avoid distracted driving one should:**

**Program your device so you do not answer and notify the caller that you will be driving and are not available to respond at the moment. In an emergency, family should know to call 911 or other family members. If family or certain individuals urgently need to reach you, devise a procedure such as three rings, hang up, wait two minutes and call again, repeat once to allow time to pull over safely.**

**Know your route in advance and, if using a navigation system, pre-program it.**

**Prepare the vehicle cab and yourself for driving, including your management of any distraction, be they inside or outside of your vehicle.**

**Focus on driving: Maintain safe spacing or move to a less obstructed lane.**

**ASSE is urging motorists to put their phone down, or simply turn it off when they're in the car, avoid eating and program the GPS before you leave. Minimizing distractions allows drivers to maximize their attention on the road.**

**Currently, 35 states, the District of Columbia, and Guam ban text messaging for all drivers and many states now ban cell phone use by drivers. The list of states banning in-vehicle cell-phone use is at http://www.distraction.gov/content/get-the-facts/state-laws.html.**

**Additionally in April, Dr. Lori Rice, of Virginia Commonwealth University (VCU), will discuss ways to reduce distracted driving among employees at an ASSE Colonial chapter meeting with 'Drive Smart Virginia' Monday, April 16th, from noon to 1:30 p.m. at the Virginia Farm Bureau in Richmond. Dr. Rice, an industry expert on behavioral driving issues, notes that 80 percent of all crashes and 65 percent of all near crashes are caused by distracted driving. As many employees not only commute by passenger cars to work but also drive while on the job, such as utility and delivery drivers, law enforcement, and more. This is a key issue for occupational safety and health professionals.**

By Natalie Crnosija | March 12, 2012

## Triveni Rao wins Brookhaven Town's 2012 Women's Recognition Award

Triveni Rao

Triveni Rao, a senior physicist at the U.S. Department of Energy's Brookhaven National Laboratory, will be honored for her scientific accomplishments at Brookhaven Town's 26th Annual Women's Recognition Night on March 22 at 7 p.m. at Town Hall in Farmingville. She will be among the 12 women honored for their contributions to a variety of fields in a public ceremony that celebrates the significant achievements of local women during Women's History Month.

Rao, the head of the Laser Applications Group in the Instrumentation Division, is developing new lasers and photocathodes for critical experimental programs in accelerator technology and materials science.

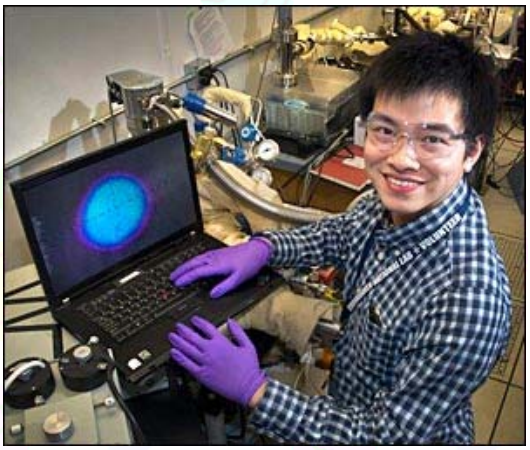
"I am honored to be recognized by the town of Brookhaven for my work," said Rao, who is internationally recognized for her research and development on photocathodes for high brightness electron beams. She has contributed significantly in the field of interaction of high intensity short laser pulse with matter, and characterization of ultra short laser pulse and electron beams.

Rao is a pioneer in the subject of metal photocathodes, which release electrons when struck by light, and are fundamental to a number of electron accelerator facilities at Brookhaven and around the world. Rao's research focuses on measuring and improving electron production and extending the lifetime of the cathode materials. To create high brightness injectors for accelerators, Rao recommended copper and magnesium as suitable cathodes. She developed a processing technique that improves the yield of metal photocathodes by a hundred to a thousandfold. Rao is also investigating the use of diamonds to increase electron yield by a hundredfold.

Rao received her Ph.D. in physics from the University of Illinois in 1983. After working at Quantronix Corporation for a year, she joined Brookhaven Lab in 1985 as an assistant physicist. She rose to associate physicist and physicist positions in 1987 and 1990, respectively. Rao, who was named a Fellow of the American Physical Society in 2009, is a tenured physicist at Brookhaven.

By Natalie Crnosija | March 26, 2012

## Collider-Accelerator Department's Erdong Wang Wins 2012 IEEE/NPSS PAST Doctoral Student Award



Erdong Wang

The Institute of Electrical and Electronics Engineers/Nuclear and Plasma Science Society has awarded the 2012 Particle Accelerator Science and Technology Doctoral Student Award to Brookhaven Physicist Erdong Wang for his contributions to the physics of high quantum-efficiency photocathodes. The award recognizes a student's technical contributions to particle accelerator science and technology, as evidenced in his or her doctoral thesis.

"When I heard I received this award, I knew I did solid work," said Wang. "I really appreciate being nominated. I am grateful for the great research environment at Brookhaven. I also want to express my gratitude to my advisor Kui Zhao at Peking University for his kind support and advice. I am sincerely thankful for IEEE/NPSS's recognition."

Wang's thesis research focused on the development of photocathodes for superconducting radiofrequency (SRF) electron guns, a technology that will play a key role in an energy-conserving particle accelerator, called an Energy Recovery Linear Accelerator (ERL). A small ERL is currently being built at Brookhaven as a prototype for future accelerator technologies.

An electron gun's function is largely dependent on its photocathode, a negatively charged probe that emits electrons when exposed to light to create an electron beam. A high current beam is created when the photocathode's small investment of electrons is amplified by hydrogen-treated diamond in a superconducting cavity. This amplifier in a superconducting cavity supports an electron beam with a high average current and low beam degradation, as compared to beams produced by a traditional cathode.

For his thesis, Wang worked on gallium-arsenic (Ga-As) photocathodes for a superconducting gun to produce polarized electron sources. Specifically, he focused on photocathode preparation techniques and conducted systematic studies of photocathode quality. He also performed tests of the cathode using a SRF gun. Wang performed beam dynamic simulations and theoretical studies to hypothesize the electron bunch length, which affects the strength of the beam, and the effect of electron back-bombardment, a phenomenon that degrades the cathode and beam quality.

Polarized electron cathodes might be used in a proposed electron-ion collider (EIC) at Brookhaven's Relativistic Heavy Ion Collider, an "atom-smasher" that accelerates and collides beams of heavy ion and/or protons to recreate and explore the conditions of the early universe. The idea is to use a beam of electrons to collide with RHIC's heavy ion or proton beams to open new avenues of research.

Another facet of Wang's thesis research was his work with diamond amplifiers, little diamond capsules that are incorporated into the gun's structure to help produce a dense electron beam. For this construction, Wang developed a technique to reproducibly create diamond amplifiers, having studied the application of hydrogen-treated diamonds. Wang's hypothesis, that the electron beam emission from the diamond surface depends on the applied field, was supported by experimental data and led to new information about the energy spread of the electrons inside the diamond.

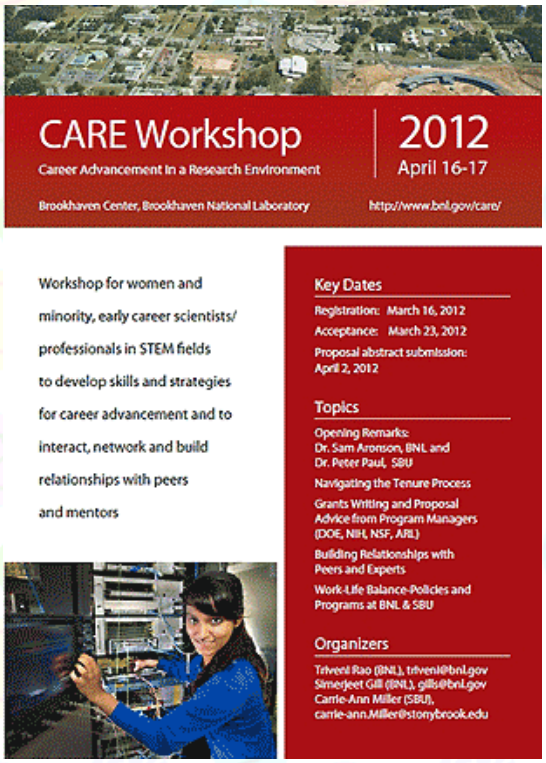
The results of Wang's research have impacts beyond the scope of his thesis, as diamond amplified photocathodes are likely to be essential for future electron guns.

The award includes $2,000 and a plaque that will be conferred at the award ceremony on Thursday, May 24, during the 2012 International Particle Accelerator Conference in New Orleans. Wang will also present his results at the conference.

Wang received his Ph.D. at Peking University. Having completed his thesis at Brookhaven, he is continuing his research at the Lab as a research associate.

By Natalie Crnosija | March 26, 2012

# CARE 2012 Workshop: Helping Promote Careers in Science for Women, Minorities




For more information, see the CARE 2012 website.

Brookhaven Women in Science (BWIS) of BNL and Women in Science and Engineering (WISE) of Stony Brook University (SBU), with the support of BNL management, are organizing the CARE 2012 workshop on April 16 and 17 at BNL. CARE stands for “Career Advancement in Research Environment,” and the aim of CARE 2012 is to provide women and minority early career scientists and engineers with the skills and strategies necessary for career advancement in the fields of science, technology, engineering, and mathematics, or STEM.

Triveni Rao, a senior physicist in the Instrumentation Division, and Simerjeet Gill, an assistant scientist in the Nuclear Science and Technology Department, are leading CARE 2012’s organizing committee. Their three-day training session in the FORWARD to Professorship Workshop — (FORWARD stands for Focus on Reaching Women for Academics, Research, and Development) held at Gallaudet University in May 2011 — laid the foundation for CARE 2012.

Studies have shown that the collective intelligence of a working group increases when there is gender balance in the group. Organizational structures, practices and cultures have a significant impact on fostering diversity in the workforce. Said Rao, “BWIS and WISE thought it was important to sponsor this workshop, not only to help young scientists advance their careers, but to expose the early career staff to the structures, practices and opportunities at their home institutions. Everyone profits.”

The first session of the workshop will discuss the tenure process at BNL and SBU, with talks and panel discussions to prepare the attendees for the next step on their career paths. In the second session, a number of program managers will discuss funding opportunities in their agencies and will critique proposal abstracts submitted by the participants. Day 2 will focus on the softer issues, such as mentoring and balancing an active career with a fulfilling personal life. Participants’ feedback on what they would like to see in a mentoring program will impact the future plans at both BNL and SBU. The informal format of the Work-Life balance session will not only cover the policies and practices at the workplace, but will also give insight into different approaches to address the most common challenges that participants face.

Financial support for CARE 2012 comes from a National Science Foundation grant funded through George Washington University. Additional information about the CARE workshop can be found at http://www.bnl.gov/care/.

# FUN TIME

**This is a new version of the classic Tic Tac Toe game. Playable either against a friend or against the computer.**
**Please click here for game.**

*Folks,*

*Once again, I'd like to thank everyone at C-AD for your continued support, donations and contributions that you so freely give to the Food Drive throughout the year. It means a lot to so many families.*

*If everyone can bring in at least one non-perishable food item, this would help the local food pantries in our area. There are so many families who are in need of food and depend on their local food pantry to have at least one meal a day. With the food supply so low, the volunteer's who help out at our local food pantries can't help those in need. So please……bring whatever you can to replenish the food supply for those in need.*

*Your donation of any non-perishable food item can be left in the box marked "Food Drive" located in the 911A Lobby.*

*Your continued support is appreciated.*

*Thank you.*

*Anne Marie Luhrs*

## April 9-13:

# BERA Spring Break Children's Recreation Program in progress

# NO LOCKER ROOM & POOL use between 2–5pm!!!

## April 9-13:Children may swim FREE from 2-5pm.

## A parent must be present.

**NY City Do as you Please- Saturday May 5, 2012,** $15 pp. 52 seats only

Drop off in the Bryant park area of Midtown Manhattan. Kids under 2 free on lap.

Depart Brookhaven Center 10am, Depart Bryant Park area 7pm. This time frame will allow you to buy your own tickets to Broadway shows or other events, etc. http://intranet.bnl.gov/bera/recreation/#PlumBenefits

**Atlantic City, NJ Saturday May 5** , 2012, $30pp, 50 seats only

Casino & offer to be announced. Depart Brookhaven Center 9am, depart casino 8pm.

21 and over only for this trip with photo ID required, no children.

**EEnglishtown NJ RACING @ NHRA Toyota Supernationals Friday 6/1/12** $55pp 40 seats only /span>

(Note: an approved vacation day will have to be requested. This trip is not suggested for young children)

IIncludes reserved seat in section 3 @starting line/pit side, luxury bus & driver tip. Depart Brookhaven Center at 11am & race at 9PM.

***BERA Summer Recreation Camp is open for the dependent children of BNL employees and those with summer guest appointments.***

Summer Recreation (July 2-August 24) limited to 100 children, ages 5-13

- Deposit due with application **no later than April 20th**

- Final payment due no later than June 1st

Swim Lessons Only (group lesson, once a week, from July 9-August 24)

- Applications and payment due no later than June 1st

Please contact me (x5090) or Joanne Rula-Delles (x8481) with any questions. www.bnl.gov/bera

**ALUMNI NEWS: AGS/RHIC/C-AD RETIRED CROWD - We'd enjoy hearing from you and what you have been up to. Please send your notes to pmanning@bnl.gov**

## You can catch up on all of Eric Forsyth's travels by clicking on his sailing yacht below.

# April 2012

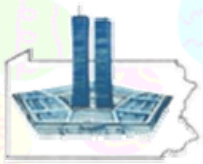
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| 1<br><br>Palm Sunday<br><br>April Fool's Day | 2 | 3 | 4<br><br>Passport to Retirement - First Class or Coach? 12noon, Berkner | 5 | 6<br><br>Good Friday<br><br>AP Seminar "LHC Beam-Beam Studies", Xavier Buffat, CERN, 4pm, | 7<br><br>Passover |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Bldg. 911 LCR | |
| 8   | 9 | 10 | 11 BSA Noon Recital | 12 | 13 | 14 |
| 15 | 16 | 17 LI Earth Summit - Green Vehicle Display, Lobby Exhibits, Workshops, 11:30am, Berkner<br><br>Physics Colloquium "Nuclear Physics - Bridging from Quarks to the Cosmos", James Vary, Iowa State U., 3:30pm, Bldg. 555, Hamilton<br><br>BSA Distinguished Lecture "Starving the Ocean: Why We Should Leave Small Fish in the Sea", Ellen Pikitch, SUNY Stony Brook, 4pm, Berkner | 18 | 19 BWIS Colloquia Series "A Debate on Science and Society", Laura Snyder, 4pm, Bldg. 555, Hamilton | 20 | 21 |
| 22 Earth Day | 23 | 24 Physics Colloquium "Is Nature Natural? The Test Case of SUSY", George Redlinger, BNL, 3pm, Bldg. 555, Hamilton | 25 Administrative Professionals Day<br><br>Brookhaven Lecture Roman Samulyak, BNL, 4pm, Berkner | 26 Take Our Children to Work Day | 27 | 28 |
| 29 | 30 | | | | | |

new **May 2012**

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8<br><br>Physics Colloquium "Studies of Proton and Nuclear Structure via Measurements at Forward Rapidity", Mickey Chiu, BNL, 3:30pm, Bldg. 555, Hamilton | 9 | 10 | 11 | 12 |
| 13<br><br>Mother's Day | 14 | 15<br><br>Physics Colloquium "Super Belle Experiment", Yoshihide Saki, KEK, 3:30pm, Bldg. 555, Hamilton | 16 | 17<br><br>BWIS Colloquia Series, Petra Huntemeyer, 4pm, Berkner | 18 | 19<br><br>  <br><br><br>Armed Forces Day |
| 20 | 21 | 22<br><br>Physics Colloquium "The Evangelical Rejection of Reason", Karl Giberson, 3pm, Bldg. 555, Hamilton | 23 | 24<br><br>Brookhaven Lecture, Dana Arena, BNL, 4pm, Berkner | 25 | 26 |
| 27 | 28<br><br>  <br><br>Holiday | 29 | 30 | 31 | | |



We Remember
*Sept. 11, 2001*

USS New York - A ship forged from the steel of the World Trade Center

***Editor:*** *Pamela Manning* ***x4072***