the Bulletin

BROOKHAVEN NATIONAL LABORATORY

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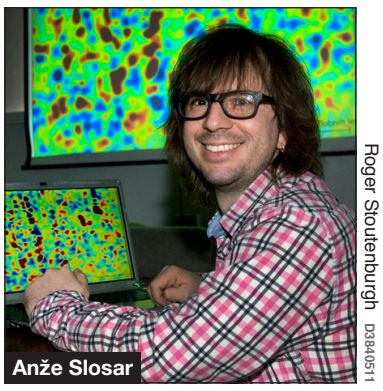


Roger Stoutenburgh D3840511

BNL Astrophysicist Named One of Popular Science's 'Brilliant 10'

How do you get named one of the 10 most exciting and innovative young scientists of the year? Brookhaven Lab Astrophysicist Anže Slosar did it by pioneering a new way to map the cosmos, a thousand quasars at a time.

The result Slosar produced is an unprecedented three-dimensional map of the distant universe using the Baryon Oscillation Spectroscopic Survey (BOSS), one of four projects on the Sloan Digital Sky Survey-II collaboration.

"Do I belong in a list of the top 10 coolest scientists in the US?" Slosar asks. "I think the brilliance really belongs to the people that made the BOSS experiment a reality and the continuing support of the Physics Department management at Brookhaven who made our cosmology group happen."

Slosar may be modest, but his groundbreaking work takes a bold approach. He owes his spot on *Popular Science*'s annual list of genius scientists to a kind of "backward" astronomy that is helping his team measure the expansion of the early universe more accurately than ever before. Instead of the standard approach of measuring light emitted from galaxies, Slosar and his team focused on the intergalactic hydrogen gas that blocks the light coming from quasars, the brightest beacons out there.

Using one of the world's largest digital cameras to look at the early universe, they mapped out what's called the "Lyman-alpha forest" — irregular patterns in the spectra of light from distant quasars that are created when the light passes through hydrogen gas clouds. It's a bit similar to determining the shape of someone's hand by watching a shadow puppet show.

The Lyman-alpha forest is a known technique, but, "what BOSS changed is that you can measure so many quasars together, because the camera is so wide-field and the spectrograph is so multiplexed it can look at a thousand objects at a time," says Slosar. "What it really adds, using these quasars as backlights, is that we can measure the universe as it was 11 billion years ago. That's really revolutionary. There's no other technique that can accomplish this."

In 2011, Slosar received a $2.5 million five-year research grant under the DOE Office of Science Early Career Research Program for his inventive use…

See ***Slosar in PopSci*** *on p. 3*

Updates From the Lab Director

By Sam Aronson, from the Monday Memo of October 8

M.H. D3400412

New Biosciences Department

The turn of the fiscal year marked the formation of the new Biosciences Department through a merger of the Medical and Biology Departments. The merger went into effect on October 1.

This regrouping of staff and their scientific research, capabilities, and facilities creates an organization ready to develop and grow these vital research programs. Under the stewardship of Associate Laboratory Director for Environment and Life Sciences Reinhold Mann, the members of this new department are poised to make important contributions to further the Lab's strategic agenda, and will continue the extraordinary record of scientific accomplishments of its predecessor departments.

David Schlyer has agreed to serve as acting Chair until a search for a permanent Biosciences Department chair is completed. David has served as interim Chair of the former Medical Department since March 2012.

Coffee and Conversation With Lab Staff

This past Wednesday, about 125 employees joined me, Doon Gibbs, Mike Bebon, Steve Vigdor, and Suzanne Davidson for some informal "Coffee & Conversation" in Berkner cafeteria. The goal — and I believe the result — was a closer, more accessible kind of conversation among Lab staff than we've had in some time, and the feedback I've received so far — from tradespeople, administrators, post-docs, scientists, and managers — is that it was an overall success and something that should be repeated.

There were no speeches or presentations, just a quick introduction and then a chance for everyone in attendance to talk and listen. Employees spoke about their concerns frankly and respectfully. I heard very clearly that many employees carry…

See ***Director's Updates*** *on p. 3*

Mort Rosen CN 3-789-79

BNL chemist Joanna Fowler with an early ^{18}FDG synthesis apparatus

BNL Honored for Developing Tracer For Brain Imaging and Cancer Diagnosis

American Chemical Society's NY Section to Name BNL Chemistry Building as Historic Chemical Landmark, 10/19

The New York Section of the American Chemical Society (ACS) will designate the Chemistry Building at BNL as an Historical Chemical Landmark, in recognition of the synthesis of ^{18}FDG, first performed by chemists at BNL in 1976. ^{18}FDG is the first successful radiotracer for positron emission tomography (PET) imaging, now used worldwide for brain research and cancer diagnosis and management.

The ceremony will be held from 9 to 10 a.m. on Friday, October 19, in the Hamilton Seminar Room of the Chemistry Department (Bldg. 555). Speakers will include Alex Harris, BNL Chemistry Department Chair; Sam Aronson, BNL Director; Bob Gordon, DOE Brookhaven Site Office Acting Deputy Manager; Benjamin Hsiao, Stony Brook University Vice President of Research; JaimeLee Rizzo, ACS 2012 New York Section Chair; and Joanna Fowler, BNL Senior Chemist and Head of Radiotracer Development.

The ceremony and refreshments ….

See ***Chemistry Landmark*** *on p. 2*

Swift Progression for NSLS-II Booster

Joseph Rubino D0050912

The electrons that will generate intense, focused beams of x-rays at National Synchrotron Light Source II (NSLS-II) are accelerated to their target energy before they enter the large main ring. That crucial job falls on a complex of equipment known as the injector, consisting of a linear accelerator, booster ring, transport lines, and storage ring injection straight section.

The booster is a joint venture between the Photon Science Directorate's NSLS-II injector group and the Budker Institute of Nuclear Physics (BINP), one of the NSLS-II vendors. BINP has a solid relationship with BNL and has played a significant role in NSLS-II development, coming up with the final design of the booster — the details regarding its magnets, power supplies, diagnostics, and other systems — and manufacturing most of the components.

Booster installation

Booster installation has been the work of many here at Brookhaven and at Budker. Specialists involved include scientists, engineers and designers, mechanical technicians, water group technicians, cable pullers, cable tray installers, controls specialists, interlock group specialists, power supply specialists, vacuum technicians, instrumentation specialists, survey and alignment specialists, radiofrequency technicians, vacuum technicians, riggers, masons, and carpenters.

The testing and installation activities have also spanned both organizations; in fact, several BINP staff have been staying on site to assist in readying design drawings, vacuum systems, power supplies, cabling, booster controls, pulsed magnets, etc. Booster commissioning, which may begin in early spring, will also involve both NSLS-II and BINP staff.

BNL's injector installation coordinator Bill Wahl discussed the injector's swift progress over the last several months. Shipments from BINP and another vendor, Danfysik, started arriving at the Lab in January with a delivery of magnet girders and other equipment. BINP's final shipments came in August.

"Thanks to support provided by numerous NSLS-II team members, we are right on track for meeting our installation and commissioning objectives for the injector," said Wahl.

"Our injector group works very closely with other groups, such as the controls, diagnostics, radiofrequency, power supply, vacuum, etc." added Guimei Wang. She is a physicist in the injector group. "After the installation we'll do the integration test and commissioning together with these other groups and BINP."

Once components arrive on site, they are inspected and tested, including checks on the electrical components, vacuum quality, and magnet cooling systems. As of late August, most of the booster's magnet girders had been installed, with the last few currently undergoing testing. Those will be installed in the middle of this month, completing the booster girder installation.

At that point, tables for the transport lines — built at BNL to connect the linac to the booster and the booster to the main ring — will be put in. By November, all the components that go on the tables should be installed.

"The directorate is now entering a very exciting time where, by spring of 2013, we will be in a position to circulate beam in the booster to energy levels as high as 3 giga-electron volts [GeV]," said Wahl. "This is a significant milestone that I am very happy to be part of."

Until then, the team is making improvements to organization and safety systems for booster commissioning. This is a consequence of lessons learned from initial linac commissioning, when, during a test, more radiation than expected was released into a controlled and secured area in the booster tunnel.

The booster sits inside the NSLS-II storage ring in its own tunnel, separated from the storage ring by a concrete wall and covered by a berm. Out of view is the linac vault, which resides adjacent to the ring building under a thick berm of earth as well.

Like the main ring, the booster ring consists of a specific arrangement of magnets, called a lattice. But the magnets are different, stemming from the rings' different jobs: The booster accelerates the electrons to their target energy of 3 GeV while the storage ring keeps them at that energy. The booster magnets can simultaneously produce a dipole field, a quadrupole field, and a…

See ***NSLS-II Booster*** *on p. 3*

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.*

— REGULARLY —

Weekdays: Free English for Speakers Of Other Languages Classes
Beginner, Intermed., Adv. classes, various times. All welcome. Learn English, make friends. See *http://www.bnl.gov/esol/schedule.asp* for schedule. Jen Lynch, Ext. 4894.

Mon. & Thurs.: Yogalates
Noon–1 p.m. at the Rec Hall (Bldg. 317). Registration required. Ext. 2873.

Mon. & Thurs.: Kardio Kickboxing
12:15–1:15 p.m. in the gym (Bldg. 461). $5 per class. Ext. 2873.

Mon., Tues., Thurs., & Fri.: Tai Chi
Noon–1 p.m., B'haven Cntr (Bldg. 30), N. Rm. Free. Adam Rusek, Ext. 5830, *rusek@bnl.gov*.

Mondays: Pilates
5:30-6:30 p.m., Rec. Hall (Bldg. 317), Registration required. Ext. 2873.

Tuesdays & Wednesdays: Zumba
Tuesdays: Noon–1 p.m., in gym (Bldg 461). Wednesdays: 5:15–6:15 p.m., at the Rec Hall (Bldg. 317).

Tuesdays: Hospitality Welcome Coffee
10:30 a.m.–noon at the Rec Hall (Bldg. 317). Meet over coffee. Children welcome. Ext. 2873.

Tuesdays: Free Knitting Lessons
2-4 p.m. Rec. Hall, Bldg. 317. All are welcome. Free materials & instruction.

Tuesdays: Toastmasters
Two monthly meetings: 1st & 3rd Tuesdays, 5:30 p.m., Bldg. 463, Room 160. Guests and visitors welcome. *www.bnl.gov/bera/activities/toastmstrs/*.

Tuesdays: Aerobic Fitness
5:15–6:30 p.m. Rec Hall (Bldg. 317).

Tuesday & Thursday: Aqua Aerobics
5:30–6:30 p.m., at the pool (Bldg. 478).

Wednesdays: Ballroom Dance
Hour-long sessions begin at 5:30, 6:30, and 7:30 p.m., Brookhaven Center (Bldg. 30). Vinita Ghosh, Ext. 6226.

Wednesdays: Play Group
10 a.m.–noon. Rec Hall (Bldg. 317). Parents meet while children play. For events, see *http://www.meetup.com/BNL-playgroup* or call Ext. 2873.

Wednesdays: Yoga
Noon–1 p.m., B'haven Center (Bldg. 30). Free. Ila Campbell, Ext. 2206, *ila@bnl.gov*.

1st Wednesday of month: LabVIEW
1:30–3 p.m., Bldg. 515, 2nd fl. Seminar Rm. Free technical assistance from LabVIEW consultants. Ext. 5304, or Terry Stratoudakis, (347) 228-7379.

Thursdays: BNL Cycletrons Club
5 p.m., Brookhaven Center. First Thurs. of month. Andy Mingino, Ext. 5786.

Thursdays: Reiki Healing Class
Noon–1 p.m., Call for location. Nicole Bernholc, Ext. 2027.

Thursdays: Postdoc Social Night
6:30 p.m. ASAP Lounge (Bldg. 462). *www.bnl.gov/asap*.

Thursday: Judo Class
7:30 p.m. Gym (Bldg. 461). Tom Baldwin, Ext. 4556.

Fridays: Family Swim Night
5–8 p.m. Pool (Bldg. 478). $5/family. Ext. 2873.

***Chemistry Landmark** from p. 1*

…will be followed by scientific presentations from 10 a.m. to 12:30 p.m. The speakers will be:

- Louis Sokoloff, M.D., Laboratory of Cerebral Metabolism, National Institute of Mental Health: "Development of the ^{18}FDG Method: A Serendipitous Journey from Bench to Bedside" (by video)
- Joanna Fowler, Ph.D., Head of Radiotracer Development, BNL, and Tatsuo Ido, Ph.D., Visiting Professor, Fukui University, Professor Emeritus, Tohoku University: "Working Against Time: ^{18}FDG and Chemistry"
- Abass Alavi, M.D., Chief, Division of Nuclear Medicine, University of Pennsylvania: "Unparalleled Contributions of FDG-PET to Medicine"
- Mony J. DeLeon, Ed.D., Department of Psychiatry, New York University Medical Center: "Alzheimer's Disease"
- Nora D. Volkow, M.D., Director, National Institute on Drug Abuse: "FDG: Contribution to Our Understanding of Addiction."

PET Plant Images for Bioenergy Research

Talking plants and PET imaging with BNL Plant Biologist Ben Babst

Ben Babst has seen things that no one else has ever seen before. A plant biologist in Brookhaven Lab's Biosciences Department — formed earlier this month when the Biology and Medical Departments merged — Babst is among pioneering researchers who are some of the first in the world to study plants using a technique called positron emission tomography, or PET imaging, which is more commonly used to diagnose cancer and study brain activity. With this innovative use of PET imaging technologies, Babst has actually watched plants shift nutrients from their leaves down to their roots while under attack by gypsy moth caterpillars — the plants safeguarding energy from their furry, leaf-chomping assailants. This, along with Babst's other investigations of transport and metabolism in plants, show much promise toward enhancing plants' abilities to make substances for biofuels that could one day power vehicles, homes, and industry.

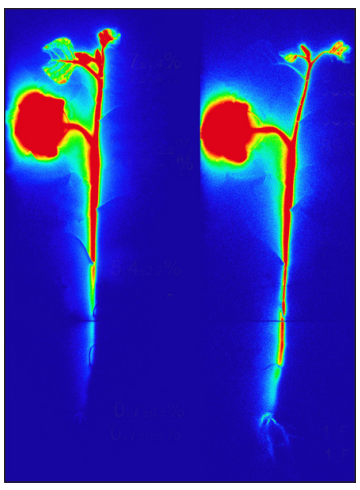
Babst first came to Brookhaven Lab as a graduate student in 2003. He returned to the Lab after earning a Ph.D. from Tufts University and holding two postdoctoral research positions. In 2010, he received a Goldhaber Postdoctoral Fellowship from Brookhaven. These prestigious fellowships are three-year appointments awarded to candidates with exceptional talent and credentials who have a strong desire for independent research at the frontiers of their fields. Originally from Frederick, Md., Babst now lives in Manorville with his wife Clare Norcio, a history professor, and their two children. In addition to the 480th Brookhaven Lecture Babst gave at Brookhaven in September — titled "PET Plants: Imaging Natural Processes For Renewable Energy From Plants" — he explains his research for a solution for the nation's energy challenges here.

— Joe Gettler

Roger Stoutenburgh D0670912

Above: Ben Babst with a prototype of a positron emission tomography (PET) device for imaging plants. This device is being designed and built through collaboration between BNL's Biosciences and Physics Departments, its Instrumentation Division, and Sherbrooke University in Canada.

> **"It seems that there is an exciting moment every time we design a new type of experiment, because we are watching things that nobody has seen before."** — Ben Babst



The PET image of a plant before a gypsy moth caterpillar attack (left) shows more nutrients in the plant's leaves. The PET image of a plant after the caterpillar attack (right) shows that nutrients are being "bunkered" as they are transported from the plant's leaves to the stem and roots. These findings inspired a number of research teams to conduct follow-up studies as well as new interests in developing strategies to reduce yield losses by enhancing plants' natural tolerance mechanisms.

What is the focus of your research?

Plants can't run away from insect attacks and they can't escape from drought, like that suffered in the Midwest this summer. To suit changing environmental conditions, they adjust internal processes such as metabolism and "vascular" transport, which circulates resources throughout the plant. The goal of my research is to provide basic biological information about these adaptations, which are needed to develop crops dedicated for bioenergy — crops that grow large and fast, can be converted to fuel efficiently, and can grow vigorously on less-than-ideal lands to avoid a scenario of competition for real estate to produce both food and fuel.

At Brookhaven, I use radioisotopes and Positron Emission Tomography (PET) to see and quantify how biochemicals are distributed throughout an entire plant. This is "basic" research that supports DOE's bioenergy mission through its Biomass program.

What's "cool" or interesting about that?

It's very cool to be the first person to actually see various phenomena happening in plants. Watching video created in our lab that shows the movement of sugars and plant hormones is an eye opener. It's also rewarding to contribute toward solutions to the energy crisis that is facing us in the U.S.

What are you working on now?

I am addressing several areas of plant biology, including hormone signaling in grass stem growth and fundamental mechanisms of vascular transport. For example, I am trying to understand the mechanisms that control how nutrients, including sugars, are allocated to different parts of the plant — roots, stems, and leaves. Sugars can be produced in leaves through photosynthesis, and then distributed to stems and roots, where they are metabolized to release energy that the plant needs to grow. We can tap those sugars for our energy needs — for both food and fuel. Converting sugars to biofuel is a very efficient process, because sugars can be fermented directly.

In one of my current projects, I am working to determine how sugars accumulate in stems of certain grasses, such as sugarcane and sweet sorghum. Sorghum is a relative of corn, and compared to sugar cane, it is much better adapted to grow in the temperate climate that is prevalent in much of the United States. Understanding the mechanisms that drive sugar accumulation in sweet sorghum will lead to new ideas for increasing sugar yields, not only for sorghum plants, but for other bioenergy crops as well.

Why do this at Brookhaven Lab?

This plant biology research for bioenergy requires specialized equipment and expertise. PET technology has been used for medical studies for decades, but there are only a few groups in the world, so far, that use it for plant research. Since much technology for PET imaging was developed at Brookhaven Lab, the Lab is unique in the world — here, we have the specialized equipment as well as people with electronics and chemistry expertise. Applications for plant science are still fairly young, so it is invaluable for me to work with a team of experts who can help find solutions when new challenges arise.

Have your efforts contributed to any discoveries?

Yes. In earlier work, we found evidence that plants may defend themselves from damage, such as a gypsy moth caterpillar attack, by bunkering nutrients below ground to the roots. It has long been known that plants can make toxins to repel herbivorous insects, but our studies suggested a broader whole-plant response to a harmful environmental condition.

More recently, my studies with corn, or maize, mutant plants have raised new questions about the phloem that transports the sugars plants need to grow from the leaves to the roots, stem, and flowers. Right now, plant biologists think that sugar loading into the phloem is what drives nutrient-containing sap to flow. The maize mutant plants I am working with export very little sugar, but surprisingly, we found that the flow of sap in the phloem is only reduced moderately compared to "normal" plants in the wild. That means something else — not sugar loading alone — is helping to drive sap flow in these plants. Identifying that something else is what we need to address now. I think the results of this research will ultimately lead to revisions in plant biology textbooks.

Who does your work benefit?

My work contributes to fundamental knowledge for the field of plant biology. My work is part of a larger process, as it provides the knowledge that plant genetic engineers and breeders need to develop crops well suited for bioenergy. The end result — a cheaper, more stable, and more environmentally friendly energy supply — will benefit everybody.

What was one of the most exciting moments of your career?

It seems that there is an exciting moment every time we design a new type of experiment, because we are watching things that nobody has seen before. The example I mentioned earlier about finding evidence that plants may bunker nutrients below ground during an insect attack was one of the most exciting moments so far. Our findings triggered a host of follow-up studies by other research groups, and it also inspired interest in strategies to reduce yield losses by enhancing plants' natural mechanisms. I anticipate many more exciting moments as we continue to visualize plant functions that have never been imaged before.

Who do you work with?

I work with many people at Brookhaven Lab, particularly with Rich Ferrieri and Abhijit Karve of the Biosciences Department and members of the PET imaging team led by Joanna Fowler. I also have ongoing collaborations with David Braun at the University of Missouri and Ismail Dweikat at the University of Nebraska.

Who funds your work? And why are they interested in what you're doing?

Our group's funding from the DOE Office of Biological and Environmental Research was renewed recently. My collaborations with Braun and Dweikat are supported with a grant from the U.S. Department of Agriculture (USDA) and DOE through the Plant Feedstock Genomics for Bioenergy program. DOE and USDA are interested in our work because our using PET technologies for plant biology shows promise for applications that address challenges in expanding the production of plant feedstock that can be converted efficiently into usable bioenergy.

Have you won any awards? Which one are you most proud of?

I am most proud of the Goldhaber Fellowship I received from Brookhaven Lab. The Goldhaber Fellowship has given me more freedom to develop new lines of research than is possible with a typical postdoctoral position.

Do you have any special talents?

I used to play piano and guitar. Now, I mostly read to relax, rather than nurturing talents. I enjoy hiking and camping with my family, and throwing a baseball or Frisbee when I'm feeling less adventurous.

Director's Updates *from p. 1*

…a sense of anxiety as they do their work, wondering "If I get injured, will I be the one to undermine the Lab's mission?" or "Will my department or I get in trouble?" Many expressed concern that if they get hurt or make a mistake they might lose their jobs or be disciplined. The leadership team also heard how employees identify and call attention to things like poorly structured training or work planning hazards, but then don't see any results or get feedback or follow-up. We also heard how bringing concerns to management's attention can be tough, and often times intimidating.

These are real issues and concerns for employees, and they are real for me and the rest of Lab management, too. It was important for us to hear. But listening is only the first step for us: to change the way we operate as a Lab and get the focus back on doing what we do best — great science — we have to continue to engage with each other, provide feedback, take action, and show results. We are committed to doing that.

This gathering was a very positive first step in creating a new environment in which feedback matters, so we are planning more gatherings — including some which would be somewhat smaller in scope — so that every employee has a chance to participate and be heard, or at least to listen in and provide feedback.

Save the Date: Saturday, 11/3

BERA African American Affinity Group To Host Gospel Fest at Brookhaven Lab

The BERA African American Affinity Group will host Gospel Fest in Berkner Hall on Saturday, November 3, at 6 p.m. Gospel Fest will feature groups and soloists from within and outside the Lab. Tickets purchased in advance will be $12 for adults, $10 for children under 12; $15 at the door. Tickets are available at the BERA Store in Berkner Hall or through Tanya Collins, *tcollins@bnl.gov*, 764-3507, or Ext. 5344; or Patrice Greenwood, Ext. 7176, *greenwood@bnl.gov*. Doors will open at 5 p.m. Refreshments will be served. Visitors to the Lab of 16 and older must carry photo ID.

Among those performing will be BNL retiree and poet Robert Brown, two-time Gospel Fest winner Minister Michael Davis, Pastor Charlotte Holly, the "Heaven Sent" Gospel group singers, 2011 Gospel Fest winners Daphne's Divine Dance group, and, from BNL: Arthur (Skip) Anderson, George Yancy, Rosa Palmore, and many more. All are welcome to attend this exciting event.

BSA Noon Recital, 10/17

Amphion String Quartet To Perform at Brookhaven

Hailed for its "gripping intensity" and "suspenseful and virtuoso playing" by *San Francisco Classical Voice*, the Amphion String Quartet was selected as a winner of the 2011 Concert Artists Guild auditions. The Quartet will perform on Wednesday, October 17, at noon in Berkner Hall. Sponsored by Brookhaven Science Associates, the concert is free and open to the public. All visitors to the Lab 16 and older must bring a photo I.D.

The Amphion String Quartet was recently appointed to a three-year residency at Lincoln Center's Chamber Music Society Two (CMS). This appointment affords the young members of this quartet three full seasons of participation in every facet of CMS activity: performances on all stages during the New York concert season, international and national tour appearances, recordings on both the in-house CMS Studio Recordings label and the *CMS Live!* digital download series, concert broadcasts on American Public Media's *Performance Today*, the CMS national radio series; and on *Live From Lincoln Center* television broadcasts.

The Quartet was awarded first prize in the Piano and Strings category as well as the Audience Choice Award at the 2010 Plowman Chamber Music Competition held in Columbia, Missouri. Additionally, the Quartet received the first prize at the Hugo Kauder String Quartet Competition in New Haven, Conn. Highlights of the 2011-2012 season included an appearance at the Schneider Concert Series in New York City, a world premiere of a string quartet by John Sichel in New Jersey, as well as performances at the Metropolitan Museum of Art.

For the concert at BNL, the Quartet will perform Hugo Wolf's *Italian Serenade*, Janacek's *Intimate Letters* quartet, and Mendelssohn's *Quartet No. 3*. — Jane Koropsak

NSLS-II Booster *from p. 1*

…sextupole field, allowing the magnets to bend and focus the beam at the same time. The main reason for combined function is compactness and cost efficiency.

Wang designed and further optimized the transport lines to connect to the booster lattice. She studied extensively the beam dynamics to ensure beam quality despite certain problems in the machine, such magnet field and alignment errors. Also, Wang is currently in charge of the injector high-level application development. Along with BINP, she is developing user operations panel applications and beam measurement applications for booster commissioning, which will greatly improve the machine's operation efficiency.

Other NSLS-II staff members deeply involved in injector development are: Timur Shaftan, who is in charge of injector development; Raymond Fliller, who has participated extensively in testing, design and commissioning; and Jim Rose, the radio-frequency group leader. As noted by Wang earlier, other NSLS-II groups are also making significant contributions.

— Laura Mgrdichian

Slosar in PopSci *from p. 1*

…of the Lyman-alpha forest to measure the makeup of the cosmos, and so far, his team has surveyed over 100,000 quasars, with results from the first 14,000 published already.

In the coming months, they will publish new results from 60,000 quasars, and by 2014, they hope to have observed 150,000 of these ultrabright stars. With a map that big, they will be able to explore further into the mysteries of the cosmos to measure dark energy, the unexplained force that is thought to be driving the accelerating expansion of the universe.

— Chelsea Whyte

In Memoriam

Edith Lehman, who came to the Medical Department as a laboratory aide on August 9, 1964, and retired from Medical as a senior research services assistant on January 31, 1991, died on August 29, 2012, at the age of 86. She had left the department on August 9, 1968, rejoining it on October 4, 1971.

Thomas Malinowski, who arrived at the Health Physics Division on August 7, 1961, as a technician II, and retired from the same division as a technical associate I on April 22, 1994, died at the age of 80 on February 29, 2012.

Two EAP Talks Ahead

'Resolving Conflicts Creatively,' Wednesday, 10/17

'Bring Out the Best In Others,' Wednesday, 11/14

The Lab community is invited to attend a talk by Jude Treder-Wolff of Magellan on "Resolving Conflicts Creatively." Sponsored by the Employee Assistance Program headed by Nancy Losinno, the talk will be given at noon on Wednesday, October 17, in Berkner Hall, Room B. The speaker will address topics such as increasing your "emotional intelligence" on the job, and getting along with others more effectively.

Treder-Wolff will give another talk in this series on Wednesday, November 14, also at noon in Berkner Hall, Room B. This talk is titled "Bring Out the Best in Others."

Seating is limited, so registration is required by emailing *nlosinno@bnl.gov*. You may register for one or both of the talks.

AdoptaPlatoon Book & Bake Sale, 10/25

The Brookhaven Veterans Association's AdoptaPlatoon group is sponsoring a book and bake sale on Thursday, October 25, in Bldg. 400 lobby, 11 a.m.-3 p.m. All items will be $1 each, and all proceeds will go toward the efforts of AdoptaPlatoon to support troops in Afghanistan.

Bakers Needed! Please wrap whatever delicious goodies you make: cookies, cupcakes, breads (sliced), should be individually wrapped in cellophane so they can be sold at $1 each (please size accordingly). Bring your contributions to Bldg. 400 lobby at 11 a.m. on October 25. We greatly appreciate your help.

Catch Up on BERA Trips, Events

Tickets for these trips are now on sale at the BERA Store in Berkner Hall (Bldg. 488), open Monday through Friday, from 9 a.m. until 3 p.m.

Culinary Institute Of America & Boscobel House: Mon., 11/12 (A Lab Holiday for Veterans Day) Dep. BNL 8:30 a.m., Gourmet lunch incl., tour beautiful Boscobel House on the Hudson, arr. BNL about 7 p.m. $60/person.

Book Fair: Mon. & Tues., 11/26, 27, from 10 a.m. to 2 p.m. each day. In the lobby of Berkner (Bldg. 488). Books, stationery, scrapbooking accessories, music collections, early learning tools, more.

Do-as-You-Please in New York City: Sat., 12/1, dep. Lab 10 a.m., dep. midtown 7 p.m. $10/person, under 3 free on lap.

BERA Holiday Party: Fri., 12/7, $60/person full buffet, bar, DJ, at Hotel Indigo, Riverhead. Spend night for $72 with full breakfast.

Radio City Christmas Spectacular: Sun., 12/9, dep. Lab 7 a.m. (9 a.m. show,) then see tree, etc. Dep. NYC 3:30 p.m. $70/person.

NY Nets: At the new Brooklyn facility. Nets vs. Dallas on March 1, 2013. $75/person for 8 p.m. game.

Calendar

Friday, 10/12

***Healthfest 5k Run**
Noon. Bldg. 435, Biology. See p. 4.

— WEEK OF 10/15 —

Monday, 10/15

***Healthfest: BERA Free Trial Classes**
See *www.bnl.gov/bera/*.

Wednesday, 10/17

Q Source Inc. Industrial Suppliers
11 a.m.-1:30 p.m. Berkner Hall lobby. Representatives of quality product brands, e.g. Brady, Metro, IAC, for industrial assembly and production, electronic, parma sector and laboratory needs. Contact Nicole Alexander, *qsales@qsource.com* or 563-0600.

***EAP Lunchtime talk**
Noon. Berkner Hall, Room B. "Resolving Conflicts Creatively," talk by Jude Treder Wolff, Magellan Health Services. Please register with *nlosinno@bnl.gov*.

***BSA Noon Recital: String Quartet**
Noon. Berkner Hall. The award winning Amphion String Quartet will play works by Wolf, Janacek, and Mendelssohn. See notice below, left.

Thursday, 10/18

***Healthfest Talk: Injury Prevention**
Noon-1 p.m. Berkner Hall, Room B. Talk by Lab physical theripist Gary Welch. All welcome.

Friday, 10/19

***BNL's Chemistry Bldg. Designated Historical Landmark**
9 a.m. Hamilton Seminar Room, Bldg. 555. Ceremony: American Chemical Society NY Section honors BNL chemistry, followed by scientific talks until 12:30 p.m. See p.1.

— WEEK OF 10/22 —

Monday, 10/22

***Healthfest Talk on Vaccines**
Noon-1 p.m. Berkner Hall. "All You Need to Know About Vaccines for You and Your Family." Lab community all invited.

Tuesday, 10/23

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 regular business, committee reports, and the president's report.

Arrivals & Departures

— Arrivals —

None

— Departures —

Eugenii Donev..... CMP&MS

BNL Art & Crafts Wanted For Fall Show, 11/19-21

BNL artists, photographers, sculptors, and crafters — your work is needed for the BNL Art Society's upcoming Art and Crafts Show sponsored by the BNL Art Society, the BNL Camera Club, and the BNL Crafts Club, to be held at Berkner Hall, Monday to Wednesday, November 19–21, 11:45 a.m.–1:30 p.m.

BNL employees, retirees, facility users, guests of BNL, and family members 15 years and older, may all contribute up to three pieces. Email or mail information on your entries to Liz Seubert or Joe Gettler, Bldg. 400C, *lseubert@bnl.gov* and *jgettler@bnl.gov* by Monday, November 5.

Exhibits for the show must be delivered to Berkner Hall, 2-4 p.m., Friday, November 16, and collected on Wednesday, November 21, 1:30-3 p.m.

Alex Reben V0021012

Annual Healthfest Mission Serves Safety Effort

Michael Thorn organizes and promotes the Lab's month long Healthfest event every year. Learn how the Lab's fitness programs, sports, lecture series, and other employee benefits also support the Lab's safety mission: *http://1.usa.gov/OQW5Dq*.

Safety makes science possible at Brookhaven National Laboratory

Brookhaven National Laboratory
HEALTHFEST2012

The BNL community is invited to participate in the annual month of health, safety, and wellness events held during the entire month of October. There is something for everyone. Details: *http://1.usa.gov/OPWypj*

5K Run Today, 10/12

The 5K run today, October 12, will begin outside Bldg. 463 at noon. This is the first of two events for the Healthfest Biathalon. The second event, an 800-yard swim, will be held on Thursday, October 25.

Week of 10/15: Free BERA Classes All Week

All are invited to attend BERA fitness classes held on site for free this week. See what's offered and check the schedule: *http://1.usa.gov/HZ25Cs*.

Tour BNL's Fitness Facilities on Monday, 10/15

All are invited to tour the gym and weight room in Bldg. 461 and the pool in Bldg. 478 on Monday, October 15, from 11:30 a.m. to 1:30 p.m.

'Resolving Conflicts Creatively' on Wednesday, 10/17

The Employee Assistance Program is hosting this talk in Berkner (Bldg. 488) Room B from noon to 1 p.m.

Talk: 'Preparing Yourself for Injury Prevention' on Thursday, 10/18

Join Gary Welch of the Lab's Physical Therapy Office for this talk in Berkner (Bldg. 488) Room B from noon to 1 p.m.

Talk: 'All You Need to Know About Vaccines...' on Monday, 10/22

A talk titled "All You Need to Know About Vaccines for You and Your Family" will be held in Berkner Hall (Bldg. 488) from noon to 1 p.m.

800-yard Swim on Thursday, 10/25

The 800-yard swim will be held at the pool (Bldg. 478) on Thursday, October 25, from 11 a.m. - 1:30 p.m. All are invited to swim, and this is also the second of two events for the Healthfest Biathalon.

Mountain Bike Ride on Friday, 10/26

All are invited for a mountain bike ride on site on Friday, October 26. Bring your own bicycle and a helmet, and meet at noon at the gazebo (map: *http://1.usa.gov/R4zq21*).

Classified Advertisements

Placement Notices

The Lab's placement policy is to select the best-qualified candidate for an available position. Candidates are considered in the following order: (1) present benefits-eligible employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present benefits-eligible employees within the Laboratory; and (3) outside applicants. In keeping with the Affirmative Action Plan, selections are made without regard to age, race, color, religion, national origin, sex, disability or veteran status. Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and, second, for open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people. Except when operational needs require otherwise, positions will be open for one week after publication. For more information, contact the Employment Manager, Ext. 2882. Access current job openings on the World Wide Web at *www.bnl.gov/HR/jobs/*.

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

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

FIREFIGHTER/EMT - Requires five years of progressive experience in a fire department, five years as a New York State EMT-D, and Suffolk or Nassau County or NY State Certification as a motor pump operator on a Class A pumper. In descending order of importance, the following criteria will be used for selection in the event two or more individuals meet the above criteria: certified OSHA Hazardous Materials Technician; Certified in Confined Space Rescue; current line officer in home department; and possession of an associate degree or higher in fire protection technology. Must be willing to work 24 hr shifts and any day of the week. Laboratory Protection Division. Please apply to Job ID # 16216.

CUSTODIAN POSITIONS (Temporary) LG-1 – Under general supervision, performs general cleaning and housekeeping duties in all Laboratory buildings. Site Resources Division. Please apply to Job ID # 16215.

Motor Vehicles

12 STINSON VOYAGER 108-1 – fully metalized, Scott T/W, vertical card compass, 4 place intercom, mode C transponder, com panel, reupholstered interior, panel lighting, Franklin 150, 2522 TTAF/1182 SMOH. $18,500 neg. Justine, Ext. 2114 or jhaupt@bnl.gov.

07 SUBARU LEGACY OUTBACK 2.5 – 72K mi. awd, a/t, ABS, a/c, am/fm radio, CD player, remote start, cloth, heated seats, roof rack, 1/owner, all maintenance, excel cond. $11,500. Mary, Ext. 6344, 929-3388 or phraner@bnl.gov.

05 CHEVY COBALT SS – 152K mi. blk supercharged 5 spd manual trans, mostly highway mi, only mod inject cold air intake, I have the stock airfilter if you want to change. $5,000 neg. 885-2984.

04 CHEVROLET AVEO LS SEDAN 4D – 54K mi. eng.: 1.6L 4 cyl. Fuel Inject., white, 35mpg, a/c, p/s, p/b, a/t, fm/cd/mp3, excel cond. $7,500 neg. slaketrac@gmail.com.

03 ACURA TL – 95K mi. Type S, loaded, clean, excel cond, orig owner, all maintenance records, will consider trading w/a pickup truck. $8,500 neg. Ext. 2337, 751-1318.

99 TOYOTA COROLLA – 172.5K mi. 4 dr Sedan, 4 cyl, a/t, a/c, radio/cass, MP3, air Bags, new 4/tires/tune up/brakes/batt, no time belt to worry about, MPG 34/hwy, alarm, just inspected. $2,800 neg. Matibur, Ext. 4331, 718-737-1757.

98 DODGE CARAVAN SE – 161K mi. 6cyl, a/t, new t/belt/batt, v/dependable/clean, NYS inspected, can see at the lab. $2,000 neg. Razvan, Ext. 5806 or popescu@bnl.gov.

98 CADILLAC DEVILLE – 137K mi. My grandfather bought this car brand new, v/clean, runs solid, minor flaws, pics avail, feel free to call. $2,800 neg. Mike Bilello, 873-5919 or Mbilello@bnl.gov.

Boats

19' AQUASPORT CUDDY CABIN – 1967 fiberglass, 120 hp johnson vro 1987, brand new 50 gal gas tank & hoses, 3/ new batt, new roller assembly on trailer, last chance to see before shrink wrap. $3,300 neg. Dennis, Ext. 4028, 375-8519.

Furnishings & Appliances

COFFEE MAKER – Cuisinart automatic grind-and-brewer, model DGB-300BK, black, $30. lmiller@bnl.gov.

DOUBLE STROLLER/ TODDLER BED – front/back dark blue/$20; Toddler bed/converted from Sleigh bed crib, natural wood finish w/crib mattress/$40/obo; pics avail. Peter, Ext. 2460.

END TABLES – 2/med, wood w/glass tops, gd cond, $100/both. Donna, Ext. 2716, 897-2736 or storan@bnl.gov.

KITCHEN TABLE & CHAIRS – Beige kitch table w/5 durable metal cushioned chairs, $150/obo, pics avail. Peter, Ext. 2460.

PIANO – upright Hamilton piano w/bench, build by Baldwin in 1954, oak color, L55xH45xD25, sound beautiful, gd key action, ask/$400. Rachel, Ext. 4213, 681-7124 or rachelnehc@gmail.com.

POTTERY BARN KIDS BED – Full size, metal frame, paid $400, will take $150, you pick up. dmcarthur@bnl.gov.

SOFA – PHOTOS AVAIL, Must sell 88"x 34" off white w/light floral tapestry, ideal for l/r guest rm, lg, comfy for sleeping, $200/obo, Jane. Ext. 2198, 909-7080 or lysik@bnl.gov.

Sports, Hobbies & Pets

2 TICKETS FOR SALE! – Trans-Siberian Orchestra Lost Christmas Eve @ Nassau Coliseum, Sat, Dec 15, 3pm, $73/ea, Great Seats! contact me for more info. Sophia, smarneris@bnl.gov.

BASS GEAR – V-Amp Pro preamp w/effects $100; Hellbabe Wha pedal $30; Bass Overdrive BOD100 $20. Chris, Ext. 5405 or camundsen@bnl.gov.

DOG CRATE – MidWest iCrate Single-Door Folding Dog Crates X-Large 48", New in Box, $80. Michelle, 516-315-6029.

FISH/ TURTLE/ FROG TANK – Tank 20 gal long with light/ cover stand and reptofilter filter. 12.5H 12w 30L $50.00 neg. Richard, Ext. 7129 or rlagattolla@bnl.gov.

LITTLE LEAGUE EQUIP – bat, helment, mit, equipment bag, $40. dmcarthur@bnl.gov.

Tools, House & Garden

BEVERAGE MAKING EQUIPMENT – one bottle capper and one bottle corker, 6 fermentation locks, gal jug size, $15/all. Robert, Ext. 4637.

FIREWOOD – $175/per healthy cord, Local delivery. Ken, 807-3882.

WALL UNIT – 3 piece Solid Oak wall unit. Two sidepieces measure 33" by 6 Ft and middle piece measure 48" x 6 ft. Excellent condition. $350. Pictures are available on request. Diana, Ext. 3681, 922-0104 or teich@bnl.gov.

XMAS DECOR & LAX REBOUNDER – Lawn Ornaments, motorized pre-lit deer, small pre-lit trees, $50 per set. Lacrosse Rebounder, new, $150. dmcarthur@bnl.gov.

YARD CLEAN UP – pls call Bill, thx. 395-0414.

Miscellaneous

AUTHENTIC DOONEY & BOURKE BAG – lg, cream color, w/signature D&B, never used/$50. dmcarthur@bnl.gov.

EMERALD GREEN PARTY GOWN – Satin w/corset back, fits 14-16, crystal beading, drop waist, sweetheart bodice,worn once, pics avail, orig/$420, ask/$150. 516-241-4598.

MET OPERA TICKETS – 2/Balcony, for "Un Ballo in Maschera" Thur, Nov 8th, w/bus from North Shore Public Library, Shoreham. Ext. 7761.

MIRRORED MEDICINE CABINET – 36Wx32Hx5D, $25. Vanity countertop w/ sink & plumbing, 48Wx22D, $50. Karl, Ext. 3116.

SAPPHIRE BLUE PARTY GOWN – size 12-14, flr length w/front slit, satin w/exquisite silver beading, new w/tags, pics avail, orig/$400, ask/$150. 516-241-4598.

SWING SET – Wood Kingdom, 2/swings, trapeze bar and tower w/slide, $150. 361-591-2272.

Wanted

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

USED CELLO – needed for home practice by 11/yr old girl, 3rd yr student. Sonya, Ext. 2937 or mcbee@bnl.gov.

Community Involvement

BRIA'S BREAST CANCER BAKE SALE – Join Bria Oct. 13th as she raises money for "Cookies And More For The Cause" (Pink Pumpkin Patch) to benefit the Breast Cancer Research Foundation.989 Old Medford Ave Farmingville. nichole.f.dowell@facebook.com.

BNL FAMILY MEMBERS IN MILITARY – If you have a family member who has been deployed overseas, please contact Adopt-a-Platoon so we may send them a goodie package. Joanne, Ext. 8481.

ADOPT-A-PLATOON – Monetary donations gratefully accepted towards mailing shipments to our platoon stationed overseas and to send goodie packages to BNL family members. Thank you. Joanne, Ext. 8481.

Free

2 HEALTHY GUINEA PIGS – incls: habitat w/stand, food, Timothy hay and bedding, great pets for kids, Photos avail. Gary, Ext. 7779 or gstevens@bnl.gov.

BREAD MACHINE – it is working fine, but you may need a little work on the spring if you use it to make a large bread dough. 343-4486 or hreels22@gmail.com.

RED-EARED SLIDER TURTLES – 2, comes w/tank (not sure of gal size but pretty big), black wrought iron stand, pics upon request. Debbie, Ext. 3120 or dreynolds@bnl.gov.

STORM DOOR – aluminum, white. 744-6794.

Yard & Garage Sales

HOLTSVILLE – Saturday, 10/13, Multi-family yard sale. Lots of good stuff for everyone-games, tools and household goods. 9am-3pm, 128 Abner Drive off of LIE South Service Road. Ext. 5960.

YAPHANK – MOVING SALE:1 Southview Ct.- Saturday(10/13) & Sunday(10/14)10:00-5:00. Everything must go!. Rob, 516-639-3732.

For Rent

CORAM – priv rm & b/r, share lg home w/2 males, incls all, off st prkg, quiet, safe neighborhd, 25 mins from BNL, furnd or unfurnd, be agreeable to backgrd/credit check, 1st mo rent/1 mo sec. $550/mo. Doug, 848-4381.

ISLANDIA – 1 bdrm apt, single adult, no pets, non-smkr, cable/elect heat all incld. $900/mo. Angelo, Ext. 8004 or acaruso@bnl.gov.

MASTIC – Cozy 2 bdrm sing. fam. house, 1 ba, lr/dr combo, fenced yard. Small pet considered. 2 mo sec req., utilities not included. Avail Nov. 1. $1,525/mo. 775-8703.

MASTIC – Victorian 3 bdm 2full bath hse for 3persons in quiet,neighborhd area, close to everything 8 min to BNL, heat, TV cable, int, formal l/r, d/r, f/p, new big eik, own bdrm, all incld, no smkg/pets. $750/mo neg. 210-369-8254.

MATTITUCK – v/priv furnd/unfurnd 1 bdrm gar apt, totally sep from main hse w/priv drway, utils incld, call Denis or Sharon. $1,100/mo. 298-8104.

MILLER PLACE – adorable 3 bdrm, 1 bath, eik, lg park like grounds, w/d, avail 10/15. $1,600/mo neg. Sueann, 681-9859 or srando@empirenb.com.

RIDGE – sharing house with other BNL employees, very close to the lab; all utilities included. $595/mo neg. Min Gao, 917-721-2277.

SHIRLEY – 1 bdrm apt, l/r, full kitch & bath, no smkg/pets, pvt ent/drvwy, util incl,v/quite, located on cul-de-sac, 10/min to Lab 1/mo sec, 1/mo rent. $1,000/mo. Diana, Ext. 3681, 922-0104 or teich@bnl.gov.

For Sale

BAYPORT – Frank Lloyd Wright-style 2,300 sq ft house, 1 wooded acre nr Grt S. Bay, 4 bdrm, 2½ ba, open flr plan, lg windws, radiant heat, screened porch, excel schools. $515,000. 617-332-6264.

CENTER MORICHES – Victorian 5 bdrm, 3.5 ba, Jacuzzi, lg kit w/brkfst nook, fam rm w/fp, hwd cer flrs, fin bsmt/attic, 2-car gar, prof. garden, 0.83 acres. $559,000. 766-7189.

CORAM – lg 1 bdrm co-op, updated kitch & b/r, laundry across from unit, in/outdr pool & gym. $99,900. Warren, Ext. 8329 or whalbig@bnl.gov.

MANORVILLE – Expnd'd Cape on 8+ Acres, lots of privacy, Low Taxes, large rooms, 4/bdrms, 3 baths, full basement, 1 car gar, barn, wood stove, new heating sys. $525,000 neg. 889-3691.

MASTIC – 8 yrs young Victorian, 6 bdrm, 4 full bath, l/r w/fp, family rm, f/dr, 4/zoon heat, full fend property, sprinkler, Income home, lots more, 20'w drway, 8 min to Lab. $280,000 neg. 210-369-8254.

PATCHOGUE – 3br/2bh home for sale. Fully updated, new kitceh, new bathrooms, move in ready. Low taxes. See ML#: 2527567 for pictures and info. $219,000 neg. 901-4302.

PORT JEFFERSON STATION – 3/bdrm, 2/bath Co-op 2nd flr, new bathrms, neutral w/w rugs, appliances. Gated comm w/swimming pool, BBQ, laundry on premises, near SBU/BNL. $142,000. 431-4551.

RIDGE – REDUCED! 3 bdrm, 1 bath option for add'l .5 bath hse in Longwood, mins to Lab, great area, cac, 1/car gar, must see, great for family!. $249,000 neg. Joe, 838-8211 or jcosentino@bnl.gov.

ROCKY POINT – 4 brm, 4 ba chalet, 1.2 wooded acres, nr beach, EIK, granite counters, ss applis, huge lv, dr, fp, hardwd flrs, porch, A/C, 2 car gar., igs, quiet n'hood, legal m/d. $435,000. 631-4320.

S. SETAUKET – Three Village Green,like new cond, many upgrades, 3/bdrm, 3/bath, bsmt, gar, will consider renting @ $2750/mo. $397,888 neg. 473-5957 or mdylan07@gmail.com.

SAYVILLE – expnd'd ranch, 10/rms + sunrm, incls den w/fp, 3/bdrms, 1.5 baths up, 3 rms + .5 bath dwn, igp, cac, 1 car gar, new kitch, heating sys, gutters, excel cond & location. $340,000. 431-4551.

SHEFFIELD, VT – '86 3/bdrm, 2 bath, full bsmt, hot tub,detached 2 car gar 24.8 acres,covered porch overlooking pond on property, landscaped/trails mud rm, wood burning stoves, new carpets. $225,000 neg. 872-5074 or jonesr@bnl.gov.

Services

A list of services by BNL employees is available, call Ext. 2346 and leave an address or contact *lseubert@bnl.gov*.

the Bulletin

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

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