

Fluid 'Stripes' May Be Essential for High-Tc Superconductivity

BNL scientists, in collaboration with researchers at the Rutherford Appleton Laboratory in the United Kingdom and Tohoku University in Japan, have discovered evidence supporting a possible mechanism for high-temperature superconductivity that had previously appeared incompatible with certain experimental observations.

The finding, which hinges paradoxically on what the scientists observed in a particular material that *loses* its superconductivity for a special composition of atoms, is bound to be controversial in this dynamic field. It is described in the June 3, 2004, issue of *Nature*.

"We definitely expect some controversy," said John Tranquada of the Physics Department, lead author on the paper, "because our data suggest that some popular ideas are wrong."

In research funded by the Office of Basic Energy Sciences within DOE's Office of Science, the U.S.-Japan Cooperative Research Program on Neutron Scattering, and the Japanese Ministry of Education, Culture, Sports, Science, & Technology, the scientists were studying a

material composed of lanthanum, barium, copper and oxygen (LBCO). For this study, the crystals of LBCO were grown at BNL and analyzed at the ISIS facility at the Rutherford Appleton Lab.

LBCO's parent compound, LCO, which lacks the barium, is not a superconductor (a material through which current moves with no resistance), nor even a regular conductor. This

is because the repulsive forces between the like-charged electrons on adjacent copper atoms keep them separated and somewhat locked into position — unable to carry a current. In this arrangement, the electrons on

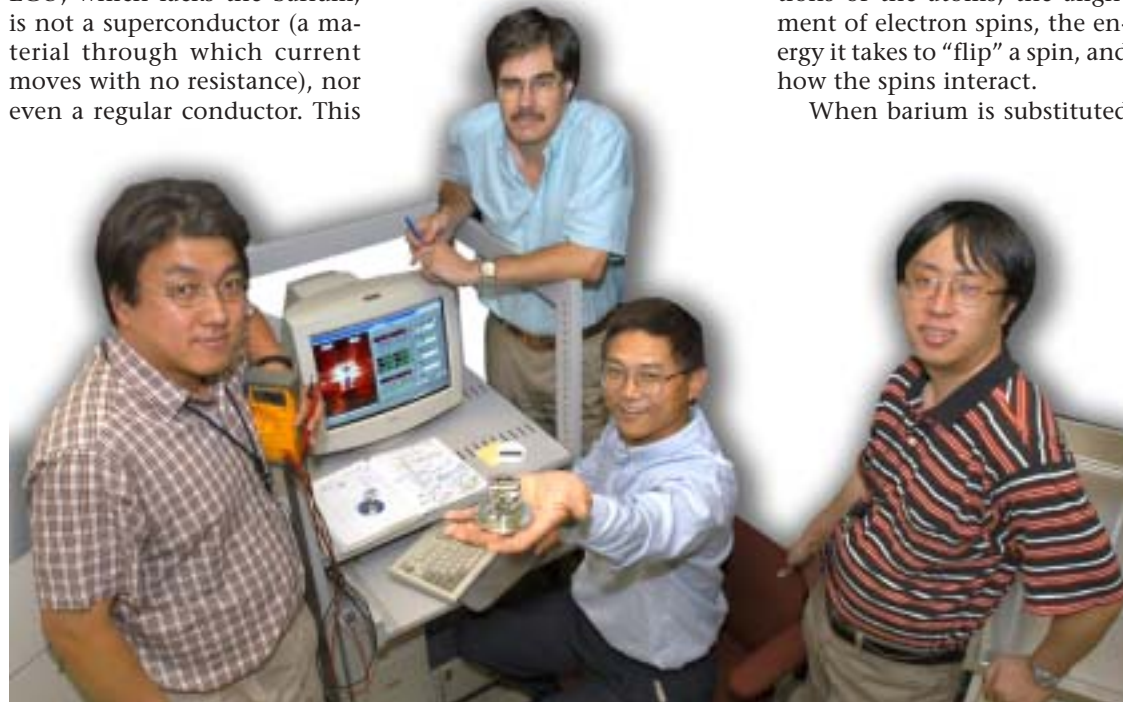
adjacent atoms align themselves so that their spins alternate in an up, down, up, down fashion, producing a condition scientists call antiferromagnetism. By scattering a beam of neutrons off the crystalline sample, scientists can measure the positions of the atoms, the alignment of electron spins, the energy it takes to "flip" a spin, and how the spins interact.

When barium is substituted

for some of the lanthanum atoms, the material starts to exhibit superconductivity. Barium has one fewer electron than lanthanum to contribute to atomic interactions, so adding barium adds electron "holes," or the absence of electrons, to the system. The more barium, the more holes, and the greater the superconductivity — until the composition reaches a point where there is exactly one barium atom for every eight copper atoms. Then, the superconductivity disappears. Above this point, as more "holes" (barium atoms) are added, the superconductivity reappears but then gradually declines.

From previous experiments, the scientists know that, at the point where the superconductivity disappears, narrow antiferromagnetic regions of the material are separated by regions with holes, forming alternating "stripes." Other scientists have proposed that such stripes might be important for superconductivity if the stripes could flow — that is, if the stripes made of electron holes could wiggle through the crystal lattice.

(continued on page 2)



Working with John Tranquada (back), Physics Department, on high-temperature superconductor research are: (from left) Hyung Je Woo, Genda Gu, and Guang Yong Xu, all of Physics.

Joseph Rubino D0070804

BSA Awards Tenure to Six Brookhaven Scientists



Photos by Roger Stoutenburgh

Brookhaven Science Associates (BSA) has granted tenure to six Brookhaven scientists. They are (pictured above, from left): Larry Kleinman, Environmental Sciences Department; Vladimir Litvinenko, Collider-Accelerator Department; William Kilgore, Physics Department; Sergei Maslov, Physics; David Morrison, Physics; and Thomas Ullrich, Physics.

As described in the Scientific Staff Manual, a tenure appointment "constitutes recognition of independent accomplishment of a high order in the performance of original research or of other intellectually creative activity appropriate to the purposes of the Laboratory.

Recognition may be earned through significant contributions to knowledge related to the purposes of the Laboratory and/or in furtherance of the aims of the Laboratory, through continuing contributions of outstanding significance to productive uses of the facilities, or through outstanding and creative contributions to their design, development, and improvement."

Tenure appointments are granted by action of the BSA Board after a rigorous selection procedure overseen by the BSA Science & Technology Steering Committee. In making tenure decisions, the BSA Board is advised by members of the Brookhaven Council, an elected body that advises the Director on matters affecting the scientific staff.

A description of the accomplishments of each of the six recent tenured scientists will appear in forthcoming issues of The Bulletin, starting this week with Larry Kleinman.

Larry Kleinman, Environmental Sciences Department

Trying to manage air pollution by regulating emissions from point sources like factories and cars is a complex task, particularly considering the large number of precursor chemicals and the complex chemical reactions within Earth's atmosphere. To simplify this chemistry with the aim of identifying ways to more effectively regulate

the source pollutants, atmospheric chemist Larry Kleinman of the Environmental Sciences Department (ESD) has developed computer modeling programs based on observable data that consider classes of compounds, rather than focusing on specifics of particular reactions of particular compounds. This work has led to an important understanding of the roles played by

nitrogen oxides and volatile organic compounds in the formation of air pollutants, including ozone.

For this work, and recently, its application in diagnosing the specific causes of excessive ozone in the Houston area as part of a large, multiagency study, Kleinman has received tenure. "Kleinman's use of observation-based modeling is highly complementary to theoretical approaches in that it gives understanding of the controlling processes and leads directly to the development of robust pollution-control strategies, such as those the state of Texas is now imposing on its industrial emitters as a direct result of this work," said ESD Department Chair Creighton Wirick. "His pragmatic and yet fundamental approach and his rare ability to interpret important chemical processes with great intuition make him a nationally and internationally recognized leader in his field."

Kleinman received his B.S. and Ph.D. in chemistry from City College of New York and Yale University, in 1967 and 1971, respectively. He held several postdoctoral fellowships, including one at the University of California at Irvine and one in BNL's Chemistry Department. He joined the Lab's Department of Applied Sciences as an associate scientist in 1978, and rose through the ranks to scientist in 1980, with a continuing appointment in 1983. — Karen McNulty Walsh



Larry Kleinman

Roger Stoutenburgh D0431102

Calendar
of Laboratory Events

- The BERA Sales Office is located in Berkner Hall and is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347; or Chris Carter, Ext. 2873.
- Additional information for Hospitality Committee events can be found at the Recreation Bldg. and at the laundry, both located in the apartment area.
- Contact names are provided for most events for more information.
- Calendar 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, and Advanced classes. Various times. All are welcome. Learn English, make friends. See www.bnl.gov/esol/schedule.html for schedule. Jen Lynch, Ext. 4894.

Mondays: BNL Gospel Choir
5:15-7 p.m. Berkner Hall. All faiths are welcome. www.bnl.gov/bera/activities/choir/.

Mon., Tues., & Thurs.: Kickboxing
\$5 per class. Mon. & Thurs. noon-1 p.m. in the gym; Tues., 5:15-6:15 p.m. in the gym; Thurs., 5:15-6:15 p.m. in Brookhaven Ctr. Registration is required. Christine Carter, Ext. 2873.

Mon., Thurs., & Fri.: Tai Chi
Noon-12:45 p.m., Brookhaven Center North Room. Adam Rusek, Ext. 5830 or rusek@bnl.gov.

Tuesdays: Welcome Coffee
10-11:30 a.m., Apartment area gazebo/playground. First Tuesday of every month is special for Lab newcomers and leaving guests. Cindy Ottemann, 849-2646

Tuesdays: BNL Music Club
Noon, North Room, Brookhaven Center. Come hear live music. Joe Vignola, Ext. 3846.

Tuesdays: Jiu Jitsu Club
6:30-7:30 p.m. in the gym. All levels, ages 6 and above. \$10 per class. Tom, Ext. 4556.

Tuesdays: Toastmasters
1st and 3rd Tuesday of each month, 5:30 p.m., Bldg. 463, room 160. Guests, visitors always welcome. www.bnl.gov/bera/activities/toastmasters/default.htm.

Tues. & Thurs: Upton Nursery School
The school is on summer break. Contact Alison Tilp, Ext. 4465, or tilp@bnl.gov, for information on Sept. enrollment.

Wednesdays: On-Site Play Group
10 a.m.-noon. Apartment area gazebo/playground. An infant/toddler drop-in event. Parents meet while children play. Kati Petreczky, 821-4131.

Wednesdays: Farmer's Market
11:30 a.m.-1:30 p.m., Berkner Hall parking lot.

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

Wednesdays: Yoga Practice
Noon-1 p.m., Brookhaven Center. Free. Ila Campbell, Ext. 2206.

Wednesdays: Open Chess Night
5-8 p.m., Rec. Hall. Christine Carter, Ext. 5090.

Thursdays: Reiki Healing Class
Noon-1 p.m., Bldg. 211. Nicole Bernholz, Ext. 2027.

Thursdays: FreshDirect Delivery
3:30-5:30 p.m., Berkner Hall parking lot.

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

Fridays: BNL Social & Cultural Club
6-9 p.m. North Ballroom, Brookhaven Ctr., dance lessons, 9-11:30 p.m. general dancing. Rudy Alforque, Ext. 4733, rudy@bnl.gov.

THIS WEEKEND

Friday, 8/13

***BERA APAA Summer Picnic**
5:30 p.m. Gazebo near the softball fields. The BERA Asian Pacific American Association (APAA) invites everyone to the club's Annual Summer Picnic. Rain date, Saturday, August 14. All are welcome. Bring chairs, umbrellas, and be ready to play volleyball, frisbee, and soccer. A variety of Asian cuisine from local restaurants will be served. People will demonstrate Tinikling dancing from the Philippines, and Japanese drumming will be performed by Taiko Tides of Stony Brook University. Adults, \$5; students, children, \$3. Children under 6, free. Marie Van Buren, Ext. 4727, Beth Lin, Ext. 3372.

— WEEK OF 8/16 —

Monday, 8/16

St. Joseph's College Demo
10:30 a.m.-2 p.m., Berkner Hall. Representatives from St. Joseph's College will present BNLeers with information on courses and degree programs. Lucille Curley, 446-3252.

Brookhaven Advocacy Council
Here To Help Resolve Problems, Concerns



“Together we aim to be an honest broker for conflict resolution at BNL.”
— BAC Chair Alistair Rogers

Roger Stoutenburgh D156774

The Brookhaven Advocacy Council (BAC), composed of BNL peers, is an independent, confidential committee that reports directly to the Lab Director. As a key component of the Lab's justice system, the BAC makes recommendations to the Lab Director on the reso-

lution of problems and concerns brought to its attention by BNL employees, guests, and facility users. Says BAC Chair Alistair Rogers, “The Brookhaven Advocacy Council is a group of 11 members of the Lab with different backgrounds, and different

outlooks on life. Together we aim to be an honest broker for conflict resolution at BNL and I believe we have been effective in this role.” Once a month, the BAC holds an open meeting from 12:30 to 1 p.m. for employees, guests, and users to share their

The BAC members are: (front, from left) Amber Melosi, Quality Management Office (QMO), Ext. 3807, Bldg. 197B; Stasia Scocca, QMO, Ext. 3979, Bldg. 703M; Bill Gunther, Life Sciences Directorate, Ext. 7961, Bldg. 490; BAC Secretary Lillian Kouchinsky, Director's Office, Ext. 8772, Bldg. 460; Co-Chair Lisa Zimmerman, Medical Department, Ext. 7389, Bldg. 490; and Jan Naidu, Environmental Services Division retiree, naidu@bnl.gov; (back, from left) Joe DeLong, Collider-Accelerator Department, Ext. 2868, Bldg. 911B; Ray Costa, Facilities & Operations Directorate, Ext. 8227, Bldg. 130M; Lori-Anne Neiger, Office of Intellectual Property & Sponsored Research, Ext. 3035, Bldg. 475; Gerry Shepherd, Environment, Safety, Health & Quality Directorate, Ext. 5233, Bldg. 120; BAC Chair Alistair Rogers, Department of Environmental Sciences, Ext. 2948, Bldg. 490D.

thoughts. All BAC meetings are listed in the Bulletin's Calendar of Laboratory Events. To bring a concern or issue to the BAC's attention, contact a member directly or call its hotline at Ext. 4200. For more information, see www.bnl.gov/bac/. — Liz Seubert

BSA Distinguished Lecture
George Saliba, 8/19
Whose Science is Arabic Science in Renaissance Europe?

All are invited to the next BSA Distinguished Lecture, in Berkner Hall, at 4 p.m. on Thursday, August 19, when Columbia University Professor George Saliba will talk on “Whose Science is Arabic Science in Renaissance Europe?” Sponsored by BSA, the company that manages BNL, BSA Distinguished Lectures bring topics of general interest before the Lab community and the public. All visitors to the Lab age 16 and over must bring a photo ID.



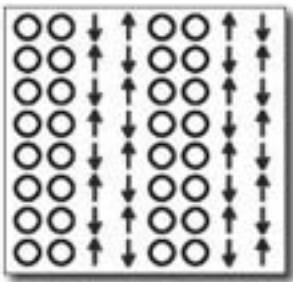
In his lecture, Saliba will investigate the relationship between Arabic and

Islamic science and that of Renaissance Europe, especially in the fields of planetary theories and mathematical astronomy, incorporating manuscript evidence from Arabic and Latin sources, George Saliba earned two degrees from the American University of Beirut: a B.S. in mathematics, in 1963, and an M.A. in education, in 1965. He earned two more degrees from the University of California, Berkeley: an M.S. in Semitic languages, in 1970, and a Ph.D. in Islamic sciences, in 1974. Saliba joined the faculty at Columbia University in 1979, where he has become Professor of Arabic and Islamic Science. He has been the recipient of numerous awards, fellowships and honors. He was elected Fellow of the National Humanities Center, 1997-1998, and he won the Kuwait Foundation for the Advancement of Science Prize for Arabic/Islamic Heritage – Astronomy, in 1996. — Diane Greenberg

Fluid Stripes May Be Essential for High-T_c Superconductivity (cont'd.)

But trying to study these materials in their superconducting form is “like looking at the stripes on a waving flag from a great distance using soda bottles as binoculars,” Tranquada said. Because everything is fluid, the pattern is hard to identify. But when the scientists measured the magnetic excitations of the static, non-superconducting form of LBCO (the one with the 1:8 ratio), which they know has stripes, they came upon a surprise. The pattern of magnetic excitations — how much energy it takes to flip the spins of the electrons — looked remarkably similar to that observed in another well-known copper-oxide superconductor made with yttrium in place of lanthanum (YBCO). Some scientists had predicted such a pattern would not be possible for a material with stripes.

The finding that the striped material produces magnetic excitations so similar to the well-known superconductor suggests that the stripes might very well



A schematic diagram illustrating stripe order in materials such as LBCO 1:8. Circles indicate the hole-doped copper sites. Up and down arrows represent magnetic moments (orientation of electron spins) on undoped copper sites. Alternating “stripes” of holes and magnetic regions may be necessary for superconductivity.

be there all along when the materials act as superconductors, not just in the static case of LBCO 1:8. “The magnetic excitations are almost like fingerprints that say these things must be similar in some way,” Tranquada said. “In fact, our results support the concept that stripe correlations might be essential to high-transition-temperature superconductivity.” The scientists have not yet demonstrated experimentally how the stripes contribute to the high-temperature superconductivity, but Tranquada says the quest for such evidence is likely to generate great interest in the field. — Karen McNulty Walsh

Note: For more information, including detailed figures, see www.bnl.gov/bnlweb/pubaf/pr/2004/bnlpr060204.htm.

In Memoriam

David Booker, who had joined the Plant Engineering Division on September 5, 1967, and had retired from the Lab on December 30, 1986, as a driver, died on June 1, 2004. He was 67. Frank DiMaggio, a guest mechanic at BNL from May 22, 1978, who had joined the Alternating Gradient Synchrotron Department as a senior designer on July 11, 1978, and had retired from the Lab as a senior design engineer on July 31, 1991, died at age 77 on June 19, 2004. Susanna Solovey, who had become a secretary B in the Physics Department on August 8, 1960 and had left the Lab on December 31, 1975, as an executive secretary, died on June 21, 2004. She was 86.

John Dioguardi, who, as a design engineer, had joined the Physics Department on July 28, 1986, and had retired from the Alternating Gradient Synchrotron Department as a senior design engineer on December 31, 2000, died at age 78 on July 22, 2004.

Michael Laino, who had become a custodian in the Plant Engineering Division on May 26, 1969, and had retired from Plant Engineering on June 30, 1977, died on July 24, 2004, at the age of 92.

Arrivals & Departures

Arrivals
Michael Appel NSLS
Gilad Raitses ES&T

Departures
Frank Latorre Plant Eng.
Robert Lavelle QM
Keith Power Magnet Division

School Supplies Urgently Needed

BNLers are asked to help local children in need by donating school supplies to Brookhaven Town Interface, which supplies more than 18 different agencies who help care for children in need. Notebooks, binders, paper, pencils, pens, crayons, rulers, school bags, etc., are all welcome. Donations may be left at the BERA Store in Berkner Hall, Bldg. 488, and at the Quality of Life/Recreation Office in Bldg. 179B (which also houses the Mail Room). You may also call Ext. 5090 if you would like items picked up. All gifts will be very welcome.

What's In BERA Store?

Do you suddenly want sunflowers? Hurry to the BERA Sales Office in Berkner Hall lobby, where you can buy them or other flowers at \$7 a bunch. All sorts of neat stuff is also to be found there: birthday, retirement, and sympathy cards, BNL T-shirts, sweatshirts, caps, pens, post-cards, film — which you can have developed — and tickets for trips. For example:

- Friday, 9/17. A few seats remain to be sold for the musical Cabaret, at Bellport Gateway Theater — \$45 includes the show and a wine and cheese reception before the curtain rises.
- Sunday, 9/19. Take a luxury bus to a U.S. history experience — visit Ellis Island and the Statue of Liberty, \$25 for adults, \$20 for children.
- Saturday, 10/16. Join a luxury bus trip up the scenic Hudson Valley, enjoy a delicious lunch at the Culinary Institute of America, and visit the historic Vanderbilt Museum, all for \$52.

The store is open weekdays, from 9 a.m. to 3 p.m. For more information, call Ext. 3347.

Quick! Swallow That!

Lab Photographer Roger Stoutenburgh spotted and snapped this on-site fast-food service — a barn swallow feeding its young — about three weeks ago.



Roger Stoutenburgh D0060704



Roger Stoutenburgh D0060704

Last Chance to Visit Science Museum This Summer

All BNLers are invited to come and experience the hands-on exhibits in the BNL Science Museum this Friday, August 13, 11:30 a.m.-1:30 p.m. All children under 14 must be accompanied by an adult. Visitors may interact with the Mars exhibit, experience the shadow-wall display, and learn about wonders of science using materials from the Science Museum school programs.

APAA Annual Summer Picnic Today, 8/13

All are invited to the BERA Asian Pacific American Association Club's Annual Summer Picnic, today, Friday, August 13, at 5:30 p.m., with a rain date of Saturday, August 14, 5:30 p.m. at the BNL Gazebo, near the ball fields. For adults, the cost is \$5, for students and children, \$3. Children under six years old are free. For more information, contact Marie Van Buren, Ext. 4727, or Beth Lin, Ext. 3372.

Enterprise-Rent-a-Car On Site at BNL

Need to rent a car for a weekend, a day, or even half a day? Enterprise-Rent-a-Car, conveniently located on site at BNL, may have just what you need. For example, cars are available for part of a day, 11 a.m.-4 p.m., or 4 p.m.-9 a.m. the next day. The partial-day rate for compact cars is \$35; for mid-size, \$40, and for full-size, \$45. Also, three-day weekend rates are now available, \$19.99 a day, Friday-Sunday, with 450 free miles included. Check for yourself, call Ext. 4888/4889, Monday-Friday, 9 a.m.-1 p.m. and 3-5 p.m. Or, stop in at Bldg. 355, 50 Brookhaven Avenue, or see www.enterprise.com.

Service Ads on Web

For a complete list of services that are provided by BNLers, see www.bnl.gov/bnlweb/pubaf/bulletin/services.htm

Road, Sidewalk Closed for Repairs

From Friday, August 20, through Tuesday, August 31, the southbound lane of Center Street and the eastbound lane of Brookhaven Avenue, in the vicinity of Bldg. 460, will be closed to vehicle and pedestrian traffic as the sidewalk is being replaced. The Plant Engineering Division apologizes in advance for any inconvenience that this may cause and will reopen the roadways as construction progress allows. For more information, contact Richard Kuczmarski, Ext. 3239.

Roll Up Your Sleeve: Blood Drive, 9/9

To replenish Long Island's blood supply, BNL is holding a blood drive on Thursday, September 9, from 9:30 a.m. to 3 p.m. in the Brookhaven Center. Those eligible to donate are people in good health between the ages of 17 and 75 who weigh at least 110 pounds. Restrictions may apply to individuals from the United Kingdom and Europe. Donors should have a photo ID and know their social security number. To make an appointment, contact Susan Foster at Ext. 2888, or e-mail donateblood@bnl.gov. In your message, include your name, phone extension, and preferred time to donate.

Calendar (continued)

Tuesday, 8/17

***Graphite Reactor Cleanup Info**
2-4 p.m. Berkner Hall. Information session on proposed Graphite Reactor cleanup plan. All are welcome. Open to the public. Visitors to the Lab of 16 and over must carry a photo ID.

Wednesday, 8/18

LeCroy Corp. Oscilloscope Demo
11 a.m.-1:30 p.m. Berkner Hall lower lobby. LeCroy Corporation representatives will display oscilloscopes ranging from 200 MHz up to 6 GHz in bandwidth (WaveSurfer, WaveRunner, WavePro, WaveMaster/SDA). Contact Hilary Lustig at LeCroy, (800) 453-2769 or Peter Ragazzo, (201) 394-7960.

Thursday, 8/19

***BSA Distinguished Lecture**
4 p.m., Berkner Hall. George Saliba, Columbia University, will give a talk on "Whose Science is Arabic Science in Renaissance Europe?" All are welcome to this free lecture, which is sponsored by BSA. Visitors to the Lab of 16 and over must carry photo ID. See page 2.

***Graphite Reactor Cleanup Info**
7-9 p.m. Berkner Hall. Information session on proposed Graphite Reactor cleanup plan. All are welcome. Open to the public. Visitors to the Lab of 16 and over must carry a photo ID.

Friday, 8/20

***Jazz Guitarist Craig Boyd in Concert**
8 p.m. Berkner Hall. See notice below, left.

— WEEK OF 8/23 —

Monday, 8/23

IBEW Meeting
6 p.m. Centereach Knights of Columbus Hall, 41 Horseblock Road, 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.

Tuesday, 8/24

***Graphite Reactor Cleanup Public Mtg.**
7-9 p.m. Berkner Hall. A public meeting will be held on the proposed Graphite Reactor cleanup plan. All are welcome. Open to the public. Visitors to the Lab of 16 and over must carry a photo ID.

— WEEK OF 8/30 —

Thursday, 9/2

BNL Career Network Group Meeting
Noon, Berkner Hall, Room A. All are welcome. Cathy Wehrmann, Ext. 7823.

— WEEK OF 9/6 —

Monday, 9/6

Lab Closed for Labor Day Holiday
BNL will be closed on Monday to celebrate the Labor Day Holiday. No Bulletin will be issued on Friday, September 10.

Tuesday, 9/7

Caring Friends Meet
Noon, Berkner Hall, Room D. All are welcome to join an informal support group serving as a resource for individuals experiencing grief following the loss of a loved one. Call Pat Hein, Ext. 3962, or Gerry Van DerLaske, Ext. 3476.

Thursday, 9/9

Blood Drive
9:30 a.m.-3 p.m., Brookhaven Center. Those eligible to donate are people in good health between the ages of 17 and 75 who weigh at least 110 pounds. Restrictions may apply to individuals from the United Kingdom and Europe. Donors should have a photo ID and know their social security number. Contact Susan Foster at Ext. 2888, or e-mail donateblood@bnl.gov with your name, phone extension, and preferred time to donate.

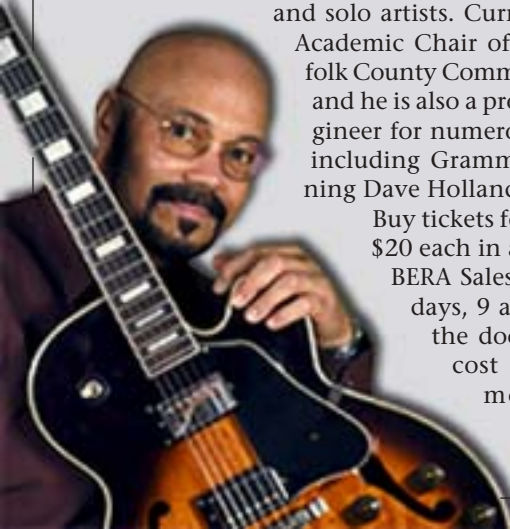
Note: This calendar is updated continuously and will appear in the Bulletin whenever space permits. Submissions must be received by the preceding Friday at noon to appear in the following week's Bulletin. Enter information for each event in the order listed above (date, event name, description, and cost)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

Jazz Guitarist Craig Boyd Gives Concert at BNL, 8/20

Jazz guitarist Craig Boyd, performing with his ten-piece band, will appear in concert at Berkner Hall on Friday, August 20, at 8 p.m. Boyd will play selections from his debut CD, called "Back on Track," at the public concert, which is sponsored by the BNL Music Club. All visitors to the Lab age 16 and over must bring a photo ID.

Craig Boyd started taking guitar lessons at the age of six and after playing in bands since age 11, chose music as his career. He has worked as a composer, arranger, producer and studio guitarist for name groups and solo artists. Currently, Boyd is Academic Chair of Music at Suffolk County Community College, and he is also a producer and engineer for numerous musicians, including Grammy Award-winning Dave Holland.

Buy tickets for the show, at \$20 each in advance at the BERA Sales Office, weekdays, 9 a.m. -3 p.m. At the door, tickets will cost \$25 each. For more information, call Ext. 3846.



Construction Equipment, Fire Engines, Sunday, 8/15

Summer Sundays



On Sunday, August 15, visitors at BNL's Summer Sunday Tours will meet the team that helps the Laboratory go and grow safely. Climb aboard construction equipment and fire engines. Do you know how to use your fire extinguisher? Here's your chance to learn.

Tours are free and no reservations are needed. Visitors may arrive any time between 10 a.m. and 3 p.m. All visitors of age 16 and over must bring a photo ID.

Additional attractions are: a new hands-on "Light & Color" exhibit, produced by the Oregon Museum of Science & Industry; an exhibit on the 2003 Nobel Prize in Chemistry, researched in part at BNL; a demo by high-school students of a robot they built; and the "Whiz Bang Science Show," with new special effects, to be given at 10:30 a.m., noon, 1:30 p.m. and 3 p.m.

Classified Advertisements

OPEN RECRUITMENT – Opportunities for Laboratory employees and outside candidates.

MK8567. ASSISTANT LABORATORY DIRECTOR FOR FACILITIES & OPERATIONS
 - Qualified candidates will possess a relevant technical degree, and 15 years of progressively responsible leadership and financial management experience in a complex organizational setting. Five years' experience within the DOE complex or other federal or military organizations, and experience managing organized labor employees or contractors is required. An advanced degree, professional registration in architecture or engineering, experience in managing operations in scientific research institutions, and familiarity with risk communications and media interaction is highly desirable. The ALD, F&O will be an individual of integrity with high personal and professional ethics, strong written and oral communication/presentation skills, and a demonstrated commitment to teamwork, innovation, collaborative decision-making, community outreach, and diversity. Candidates must be able to obtain and maintain a DOE "Q" security clearance. This position reports to the Laboratory Deputy Director for Operations and is a senior member of the Laboratory's leadership team. The ALD, F&O provides the leadership and vision for the management of site master planning, construction, facilities operations & maintenance, security, fire protection, emergency planning, administrative services, and mechanical fabrication, at the Laboratory. The scope of responsibility includes a \$62 million annual operating budget, a \$33 million construction and capital budget, and 540 employees. The

ALD, F&O develops and implements policies and procedures for key aspects of the Laboratory's performance-based management system. The ALD, F&O also serves as a Laboratory Emergency Manager and Spokesperson as required.

Motor Vehicles & Supplies

- 02 HONDA ACCORD LX COUPE - a/t, a/c, p/s, p/b, p/w, anti theft, orig. owner, 17K mi., \$15,050. Yongbin, Ext. 2835.
- 02 HONDA CIVIC EX - a/t, a/c, dk. blue, sunroof, excel. cond., 32K mi., \$12,900. Ted, Ext. 7992 or 331-4820.
- 99 DODGE MINIVAN LE - a/t, a/c, p/s, p/b, p/w, 82K mi., \$6,850. John, Ext. 8082 or 929-8204.
- 99 TOYOTA COROLLA - a/t, a/c, p/s, p/w, 69K mi., \$6,300. Sung, Ext. 4357, 924-2269.
- 98 HYUNDAI ACCENT - a/t, a/c, p/s, p/b, 95K mi., \$1,500. Yarema, Ext. 8603, 671-9781.
- 98 PONTIAC BONNEVILLE -a/t, a/c, p/s, p/b, p/w, new alt., gd. cond., 106K mi., \$3,900. Yuji, Ext. 3757.
- 97 JEEP WRANGLER SE - 5spd., p/s, 4cyl., 2dr., 4x4, teal, new soft top/tires, more, 98K mi., \$6,000. Christine, 926-0246.
- 94 JEEP GRAND CHEROKEE LAREDO - 4x4, V-8, tow pkg., leather, v.gd. cond., 156K mi., \$3,500. Tom, Ext. 7805 or 848-9485.
- 93 BUICK ROAD MASTER WAGON - a/t, a/c, p/s, p/b, p/w, new batt., tires, 8 pass., hi/mi., \$1,900. Ed, Ext. 7251 or 765-4147.
- 93 LINCOLN TOWNCAR - a/t, a/c, p/s, p/b, p/w, all pwr., 10-disc cd, gd. cond., leather, 67K mi., \$3,200. Michael, 878-8585.
- 91 PONTIAC GRAND PRIX - a/t, a/c, p/s, p/b, p/w, white/gray int., 2.1L, V6, 133K mi., \$1,700. Gary, Ext. 2576 or 589-5490.

87 OLDSMOBILE CUTLASS CIERRA - a/ c, rebuilt eng., trans., gd. tires & brakes. Bill, Ext. 4034.

74 CORVETTE STING RAY - a/t, a/c, p/s, p/b, green coupe w/t-top, v.gd. cond., 68K mi., \$5,500. Ed, Ext. 7786 or 929-5676.

BATTERY CHARGER - Sears model, 10/ 2 amp charge w/a 50 amp starter, \$45. Marita, 689-3853.

Boats & Marine Supplies

- 19' BAYLINER CAPRI - '82 Volvo, 270 stern dr. fresh water cooled, full canvas, Cost Guard pkg., \$2,000. Orazio, 286-8624.
- 19' COBALT - '74 Merc. V-8, i/o low hrs., lake used, '96 trailer, excel. cond., \$2,800. Bill, Ext. 4201.
- LEWMAR WINCH HANDLES - 2 chrome locking handles, excel. cond. \$50/ea. Brian, Ext. 2799 or 757-1581.

Audio, Video & Computers

- APPLE IPODS - 15Gb, w/earbuds, like new, \$200; 5Gb model, \$100. Ted, Ext. 7992 or 331-4820.
- COMPUTER - Compaq Presario, Win. Me, mem. upgd., color inkj. printer, 3 yrs. old, comp. table, \$350/obo. Natalie, 878-8110.
- DELL - 1Ghz CPU, 256Mb ram, 20Gb hd, Win2K, Off. XP, extras, \$250; new scanner, \$40. Don. Ext. 7237 or 929-6571.
- MONITOR - 19" ViewSonic Crt, \$90. Yigun. Ext. 5268.
- TV - Zenith, 24" color, gd. cond., \$50. Mary, Ext. 2815.

Furnishings & Appliances

- AIR CONDITIONER - 18,000 Btu, carrier wall unit, excel. cond., \$125. Bill, Ext. 4201.

BUNK BEDS - Stanley, solid ash, 4 mo. old, perf. cond., ask \$450. Angela, Ext. 5169.

OFFICE CRESIDA - \$25; 4/chairs, \$35/ea.; 2 humidifers, \$30/ea., sm. fridge, \$50; 3 file cabinets, \$60/ea., more. Marita, 689-3853.

COUCH - Ethan Allen, Colonial style, \$225; 2 chairs, \$100/ea.; 2 end tables, \$75/ea. Lester, 473-5092.

DINING SET - Amer. of Martinsville walnut table, 2 leaves, pads, 6 caneback chrs., lighted china cab. & svr. \$1,200 neg. 205-0410.

DINING TABLE - for 6 people, \$120. Sung, Ext. 4357.

ENTERTAINMENT UNIT - wood desk, endtable, shelf unit, sectional sofa. Leonard, Ext. 4457.

FLORIDA ROOM FURNITURE - \$700; 3-pc desk; sectional sofa, more. Marion, Ext. 5087 or 281-5667/after 6 p.m.

SOFA & LOVESEAT - \$150/obo. Subhash, Ext. 4762 or 696-4608.

WALL OVEN - GE True Temp Digital, \$200/ obo. Barbara, Ext. 2582 or 929-1981.

WASHER/DRYER - Kenmore, lg. capacity washer & gas dryer, v.gd. cond., ask \$160/ both. Henry, 727-7227.

WASHER/DRYER - Frigidaire, white, heavy duty, all hoses, \$300/pr.; Paul, Ext. 3194.

Tools, House& Garden

- BBQ - Kenmore propane, stnless. steel, x-large cooking area, side burner, rotisserie cover. 2 yrs. old, like new. \$600. 205-0410.
- CHIPPER - Troy built, up to 3" dia. branches, used few times, ask \$500. Henry, 727-7227.
- LAWN MOWER/WEED WACKER - Sears Yard-Man, 21" cut, self propelled, 6 spd., mint cond., \$60/both. Michael, 286-4485.

Sports, Hobbies & Pets

- CLARINET - Yamaha , great starter for student, excel. cond., maint. & sounds great., \$175. Henry, 727-7227.
- EXERCISER - Gazelle Freestyle, w/videos, brand new, as seen on TV, best offer. Melinda, Ext. 2280.
- POKER CHIPS - 500, 11.5 grams, alum., case w/cards & dice, new, excel. gift, have several, \$70. Paul, Ext. 5829 or 289-9152.
- R/C CAR - Traxxas, 4-Tec, more, \$150/ neg.; BMX, DK, Dyno bike parts, more. Christine, 821-2558.
- SLAM MAN - electronic boxing torso, new w/videos/inst., will deliver locally, paid \$250, sell for \$125/obo. Charlie, 821-1525.

Free

- BOOKS - The Longest Trek, Grace Lee Whitney; Low Calorie Cookbook; Russian Stones, Tolstoy. Morris, Ext. 4192.
- GOLDEN RETRIEVER - need loving family to adopt a 3 yr. old male. Mickey, 642-7442.
- LAWN MOWER - Sears Craftsman, attachments, incl., needs work. Frank, 399-3910.
- PRINTER - 3-in-1 scanner/copier, Xerox Workcentre XE88 Laser w/parallel cable, needs cleaning, works. George, Ext. 5298.
- WATER HYACINTHS - floating pond plants w/blue flower. Maria, Ext. 5483 or 744-0790.

Wanted

- LAWN CUTTER - to cut newly sodded lawn, no riding mowers. Edward, Ext. 2422 or 821-1252.
- OLD RECURVES & LONGBOWS - Bill Ext. 2377 or 654-8685.
- PIANO TUNER - for upright Knabe, Shoreham area. Laura, 744-4611.
- POOL FILTER - for sm. agp. Ron, Ext. 2000 or 732-6712.
- RECORDS - 50s-present, esp. 45 rpm. Kathi, Ext. 7661.
- RESEARCH VOLUNTEERS - men and women, ages 18 and over, are needed for PET study. Strictly confidential, fee provided. 344-5015.

Lost & Found

- FOUND - German Shepherd, female, approx. 5 yrs. old, 7/26, near Shirley Beach, Claire, Ext. 3051.

Miscellaneous

- CAKE PANS - custom, Winnie-the-Pooh, Flik-Bug's Life, Barbie, Wilson's brand. Instructions incl., \$5/all. Peggy, Ext. 3131.
- PHOTOGRAPHS - view my photos for sale at www.jmjohnson.com or at the BERA Store, Berkner Hall. Jim, 2238 or 447-1381.
- PIANO - Kawi upright console, beautiful cond., ask \$3,000. Henry, 727-7227.
- POOL - 24', round w/deck, chem., 4 filters, 3/DE & one sand, shed, supplies, you disassemble, \$500. Pete, Ext. 5551 or 399-2813.
- UNIQUE PIÑATAS - all occasions & characters, cartoon, Disney, Sesame Street. Donna, 821-0359.

Yard & Garage Sales

- MILLER PLACE - 8/14-15, 9-4 p.m., follow yellow sign from Miller Pl. Pond to Miller Ct. to Hallock. Michele, 516-885-6955.
- YAPHANK - 65 Shannon Blvd., 8/13-14. Walter, 924-6172.

Happenings

- CLASSIC CAR SHOW - 8/15, 10 a.m.-4 p.m., St. John The Theologian Orthodox Church, 158 West End Ave., Shirley, Car entries, \$10; general admissions, \$3. Barbara, Ext. 4960 or 878-1504.
- CRAFT FAIR - and flea market at the Old Ship of Zion Church, 145 Frowein Rd., Ctr. Moriches on 8/28, 9 a.m.-4 p.m., \$30 per 12'x12' space, 878-1115 or 475-1811.

In Appreciation

Thank you to Plant Engineering Management, the BBQ committee, and those that participated in the First Annual Custodial Services Group BBQ. With much success everyone enjoyed good food, company, and cheer. — Custodial Services Group and Supervisors.

For Rent

- BELLPORT - lg. 2nd. flr., studio, priv. ent., no smkg/pets, avail. 9/15, \$800/mo./neg. James, 567-6945.
- BROOKHAVEN - 4-bdrm. antique-filled house, \$1,600/mo., avail. 8/1-5/1. Michael, 286-4485.
- CENTER MORICHES - 2-bdrm. apt on main floor, f/b, eik, full bsmt., priv. ent., use of ½ gar., lg. yd., no smkg/pets, util incl. \$1,100/mo. Lois, 929-4753.
- FARMINGVILLE - 2-bdrm. house, bsmt., hardwood flrs., fenced yd., \$1,400/mo. + sec. req. Patty, 419-1080.
- MIDDLE ISLAND - 1-bdrm. apt., full bath & kit., central a/c, heat, gas hot water, incl., \$875. Haibin, Ext. 6151 or 921-6408.
- RIDGE - 4-bdrm. lg. Col., cath. ent., 2 baths, eik, den, l/r, Indry. rm., c/a/c, all appl., backyd., 1st & last mo. rent, 1 mo. sec., ref., \$1,990, \$2,600/mo. w/acces. apt. 209-0345.
- SHIRLEY - lg. 1-br. apt., l/r, kit., full bath, priv. ent., extra lg. storage/closets, 10 min. to BNL, \$850/mo. Nancy, Ext. 4303.
- SOUND BEACH - MPSPD, 3-bdrm., new eik, 1 rm., 1 bath, partial bsmt. w/o-s ent., w/d, util. not incl. \$1,575/mo. + sec. Brian, Ext. 3370 or 929-0383.
- WADING RIVER - 1 bdrm. apt., lg. l/r, eik., full bath, priv. ent., single, non smkrs. only, avail., 9/1, \$900/mo., + 1/mo. sec., incl. util. Richard, 929-3419.
- YAPHANK - brand new, 1 bdrm., eik, full bath, l/r, priv. ent., no smkg/pets, avail. immed., \$1,000 + 1 mo. sec. Matt, 238-5038.
- YAPHANK - studio apt., fully furn. for 1 person, priv. ent., 4 mi., from BNL, cable, high spd. Internet, \$750/incl. all. Irene, 924-3049.
- ARUBA - Marriott/share mstr. suite, 2 bdrm. lockoff, q-bed, sofa bd, sleeps 4, kit., lr, dr, fb, \$1,200; Studio, q-bed, sofa bd., sleeps 4, fb wet bar, \$700, wk. 11/5-12. Bob, 467-5853.

For Sale

- MEDFORD/GARDEN HEIGHTS- Land, 100X173K, \$180,000/neg. Cornell, 698-9016.
- MIDDLE ISLAND - Lake front co-op apt. 2nd flr., 5 mi. to BNL, new w/d, w/h, d/w, carpet & more. \$159,990. Brett, Ext. 7431.
- SHIRLEY - big property & yard, fenced swimming pool, 5 min. to BNL. Fernando, 345-3754.
- SHOREHAM - 4-bdrm. Col., 2.5 bath, l/r, d/r, den, lg. 2-car gar., low main., encl. porch, 1 acre, 10 min. to BNL, SWR schools, \$424,900. Barbara, Ext. 5896 or 744-0960.
- TIMESHARES - (1)Shawnee-on-Delaware, PA. (2)Kissimmee, FL., both are 2 bdrm., 2 bath, sleep 6, lots of amenities, \$1,500 & \$3,000 respectively. Kathleen, 499-8960.

On-Site Service Station

When buying new tires, remember that mixing tire types or sizes, or new with partially worn tires may cause unpredictable handling or loss of vehicle control. Install new tires on the rear axle. The Upton Services Inc., service station will be pleased to obtain and fit tires for you while you are at work. Call Ext. 4304 for more information.

Volunteer Expo: ‘Sharing Our Caring’

To: All the Lab community, including employees, visitors and facility users, retirees, subcontractors, and their families

From: BNL's Volunteers in Partnership Committee

Did you know that several people at the Lab give up time to help “Response,” a 24-hour hotline that lonely people may call when they feel a breath away from suicide? Other Lab community volunteers are involved in helping run a local soup kitchen, the Meals on Wheels service, and Boy and Girl Scouts. In fact, many people within the Lab community have strong links with or volunteer for charitable or service organizations.

The BNL Volunteers in Partnership Committee is holding a “Volunteer Expo” at Berkner Hall in the fall, so that agencies proposed by the Lab community can be invited to come to BNL and display information about their work.

Why not highlight your volunteering efforts and perhaps gain new members for your organization by taking part in the Volunteer Expo, which will:

- 1) promote and celebrate volunteerism
- 2) show the variety of volunteer work being done by Lab people
- 3) provide opportunities for other Lab community members to learn about organizations for which they can volunteer.

If you are interested or have any questions, complete the following form and mail it today, Friday, August 13, to: VIP-Volunteer Expo, Bldg. 134A. A VIP representative will contact you.

Volunteer Expo

‘Sharing Our Caring’



Are you currently involved in a community volunteer activity?

- ☐ Yes
- ☐ No

If yes, then would you like your volunteer organization to be represented at the BNL Volunteer Expo?

- ☐ Yes
- ☐ No

If yes, then please provide the following information:

Name of organization(s)

Your Name Bldg. Number

BNL Phone Ext. e-mail address

Return completed form today, August 13, to VIP, Bldg. 134A.