BROOKHAVEN BULLETIN
Vol. 54 - No. 5 February 11, 2000
BROOKHAVEN NATIONAL LABORATORY

# At CERN, Quark-Gluon Plasma?

## *'Circumstantial' Evidence Gives Tantalizing Hints*

CERN, the European laboratory for particle physics, located in Switzerland, has just made public the results of its five-year program of heavy-ion collision experiments, hinting at the formation of a quark-gluon plasma. This state of matter, thought to have existed just microseconds after the "Big Bang," is the same elusive quarry sought by experiments due to begin soon at BNL's Relativistic Heavy Ion Collider (RHIC).

Has CERN scooped RHIC? The answer is no. CERN stated that their evidence is indirect and "circumstantial." But their results do generate great confidence that the quark-gluon plasma may be directly observed for the first time when RHIC achieves full operational status.

The experiments at CERN, in which high-energy beams of heavy ions (lead nuclei) struck stationary targets of lead and gold, achieved total center-of-mass collision energies of 3.4TeV (trillion electron volts). These are the highest energy man-made heavy-ion collisions yet achieved. A similar round of experiments at somewhat lower energy (1TeV) was carried out with gold ion beams at BNL's Alternating Gradient Synchrotron (AGS) in 1993.

*CERN stated that their evidence is "circumstantial."*

The temperatures and densities in these CERN and AGS collisions approach the extreme values at which theories predict quark-gluon plasma may form. And many of the observations from the seven experiments at CERN are consistent with the predicted signatures of a quark-gluon plasma. Analyzed independently, none of the CERN experiments is definitive. But taken together, they provide circumstantial evidence that a quark-gluon plasma may have been produced.

*Direct* measurements, such as detecting the electromagnetic signals emitted from a quark-gluon plasma, will only be possible at the much higher collision energies that will be achieved in RHIC's beam-on-beam collisions of gold ions and, later, at CERN's Large Hadron Collider, now under construction.

The RHIC experiments, expected to begin this year, will produce total center-of-mass energies up to 40TeV, more than 10 times more powerful than those at CERN. The higher temperatures achieved in RHIC's collisions will allow the quark-gluon plasma to linger long enough for the kinds of direct observations that were not possible with the CERN experiments.

The CERN results are quite encouraging, says Tom Ludlam, BNL's Deputy Associate Director for High-Energy and Nuclear Physics. "These results set the stage for the definitive round of experiments at RHIC in which the quark-gluon plasma will be directly observed, opening up a vast landscape for discovery regarding the nature and origins of matter."

Brookhaven's Director John Marburger congratulated CERN scientists on their achievement, stating that "piecing together even this indirect evidence of the quark-gluon plasma is a tour de force. The CERN teams have pressed their capabilities to the limit to extract these tantalizing glimpses into a new domain of matter."

For CERN's announcement, see http://www.cern.ch/CERN/Announcements/2000/NewStateMatter.

—Karen McNulty

# For People With Disabilities: A New Training Program at BNL

A training program for individuals with disabilities who wish to become laboratory assistants is now being offered at BNL by Abilities, Inc. This program, the first of its kind offered in Suffolk County, is designed to prepare participants for entry-level positions in clinical, pharmaceutical, environmental and research laboratories in the community.

Abilities, Inc., located in Albertson, Long Island, is supported by and works in partnership with the National Center for Disability Services (NCDS).

The Laboratory Assistant Training program is offered to 12 students, three times per year, for 15 weeks per semester. Training will be conducted in the Medical Department, Bldg. 490.

"We see a great opportunity ahead for people with disabilities who take advantage of this program," said Jeffrey Taylor, BNL's Senior Diversity Coordinator. "The area office of the Department of Energy and Brookhaven Lab are pleased to have partnered with Abilities, Inc., to make

*(continued on page 2)*

Roger Stoutenburgh

**At the ceremony in Bldg. 490 that marked the start of the program are: (from left) Jeffrey Taylor, BNL Senior Diversity Coordinator; Lorraine Merdon, BNL Diversity Office Manager; Edmund L. Cortez, President and CEO, National Center for Disability Services; Francine Tishman, Executive Director, Abilities, Inc.; John Marburger, BNL Director; Lana Smart, Assistant Director, Corporate and Community Program Development, Abilities, Inc.; and George Malosh, DOE Brookhaven Group Manager.**

# All-Hands Meeting, February 17

**On Thursday, February 17, at 11 a.m., in Berkner Hall, Laboratory Director John Marburger will hold an all-employee meeting on the "State of the Laboratory." All are invited.**

# New Way to Make Microscopic 'Machines'

Roger Stoutenburgh

**On the screen is a magnified image of the micro-fabricated components held by investigators John Warren (right) and Don Elliott, both of the Instrumentation Division.**

For years, scientists and engineers have dreamed about building machines smaller than the diameter of a human hair to perform microscopic tasks. But the techniques used to make these micro-machines have been expensive and time-consuming.

Now, materials scientist John Warren of BNL's Instrumentation Division is working with a Hauppauge-based manufacturing facility on a micro-fabrication technique that promises to produce cost-effective devices.

Micro-fabrication techniques were first developed to manufacture computer chips and other integrated circuits. Patterns for circuits are transferred to silicon wafers using masks and some form of radiation, usually ultraviolet (UV) light, to transfer the pattern from the mask to the wafer — similar to the way an image is formed on film in a camera. This technique, however, is limited primarily to two-dimensional designs and silicon-based compounds as building materials.

*"You can do in weeks what would have taken months."*

Until recently, three-dimensional micro-fabrication (also called high-aspect-ratio microfabrication) has required the use of synchrotron x-rays and x-ray-blocking masks. The high cost of these masks and the small number of synchrotron x-ray sources limit the use of this technique.

Now, through a Cooperative Research and Development Agreement (CRADA), BNL and Standard MEMS Inc.—one of the world's largest suppliers of micro-electro-mechanical systems (MEMS), including a key element in many ink-jet printer heads—are working on a process that uses UV light to achieve results similar to those produced by x-rays. Once developed, the process could be easily incorporated into existing manufacturing facilities.

That will speed up the work of designing, testing and refining microstructures, says Warren. "You can do in weeks what would have taken months."

Some possible products include sensors for various types of energy, such as ultraviolet and infrared rays, as well as micro-actuators, or mechanical movers that can manipulate things at the micron scale. "We're already using this technology to make more accurate x-ray detectors and we're exploring its applicability for several biomedical applications," Warren says.

To make these new microstructures, designers use a patterned mask to cover portions of a UV-sensitive film-like material and expose it to UV rays. The UV exposure triggers cross-linking to strengthen the bonds in the exposed areas of the material. When the material is unmasked and put into a developing solution, the stronger, cross-linked areas remain while the areas that had been masked dissolve. The resulting "photo-etched" 3-D structure can then be used as a scaffold or a mold for other building materials.

*"We're already using this technology to make more accurate x-ray detectors, and we're exploring . . . biomedical applications."*

BNL's participation in this CRADA is funded by the DOE's Office of Science, Laboratory Technology Research Program.

— Karen McNulty

## Disabilities (cont'd)

this program available in Suffolk County. BNL is committed to promoting diversity in the workplace, and part of that commitment is to employ qualified people who have disabilities and to provide opportunities to enhance their employability in the community."

"This is an extremely exciting step for us at NCDS," said Edmund L. Cortez, NCDS President and CEO. "For the first time since this program started nearly a decade ago, we are offering students the opportunity to train at one of the nation's leading science institutions. We believe this will give our students practical lab experience in a real-world setting while expanding our outreach to the people of Suffolk County." — Diane Greenberg

## Graphite Reactor Study Online

The draft Brookhaven Graphite Research Reactor (BGRR) Removal Action Alternatives Study is now available for review and comment.

The study presents several alternatives for the future of the BGRR, and recommends four of seven alternatives for further review. A final report will be issued after public comments have been received and considered. A fact sheet and a complete copy of the draft document are available on the web at http://www.bgrr.bnl.gov/docs.html. The public comment period began on January 28, and continues through February 28, 2000. Comments may be mailed to James Goodenough, the DOE Project Manager, at Bldg. 701, or e-mailed to good enough@bnl.gov.

For additional information on the study, attend a tour of the BGRR and open house "question-and-answer" session at the BGRR on Wednesday, February 16, 3- 6:30 pm.

## GLOBE@BNL Club

The gay and lesbian club, GLOBE@BNL, will be having its monthly meeting today, Friday, February 11. For more information and the meeting's location call Mike Loftus, Ext. 2960, or Chris Gardner, Ext. 4537; or go to the club's site on the BERA activities page at http://www.berahome.bnl.gov/beraact.htm.

## Hospitality Committee

The Committee invites all newcomers, guests, and visitors to coffee on Tuesday mornings. For the coffee meeting on February 29, you are asked to bring a little food to share. For more information, call Mimi Luccio, 821-1435.

More details are posted in the laundry room and on the door of the Recreation Building. For more information, call Hospitality Chair Susan Hart, 821-4257.

## Lifeguard Training

BERA will offer a lifeguard training course at the BNL swimming pool, Bldg. 478, beginning Sunday, February 27, at 10 a.m. The course is open to BERA members who are at least 15 years old, and the class size will be limited. Registration is taking place now at the BNL pool. For fee and other information, call Head Lifeguard Susan Dwyer, Ext. 3147 or 3496.

## Weight-Watchers

For more information, contact Mary Wood, Ext. 5923 or wood2@bnl. gov.

The registration date for the upcoming Weight Watcher sessions will now be at noon on Wednesday, February 23, just before the start of first session. The 10-week program will be held in the south dining room of the Brookhaven Center on Wednesdays, noon-1 p.m. Fee: $89.

## Arrivals & Departures

**Arrivals**

**Katherine A. Carney** ..... Waste Manag.
**Abhay L. Deshpande** ..... Physics
**William C. Nolan** ..... Biology
**Ralph L. Werner** ..... Physics

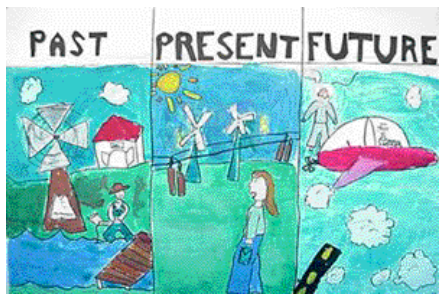
**Departures**

**Joseph M. Collins** ..... Physics

## *DOE-Sponsored 'Power Art' Show Opens at Berkner: Three L.I. Students Among 100 Exhibitors*

An exhibit showcasing the top 100 entries in a DOE-sponsored student art contest will open at 10 a.m. on Monday, February 14, in Berkner Hall lobby.

Three students from the Lindell School in Long Beach, New York, whose posters were chosen from among nearly 4,000 entries, will be on hand to receive awards.




**"Windmills Through Time" by Finalist Elana Taubman, Grade 7 to 8 — received cash awards. One of the Long Beach students was among 30 finalists.**

Contestants in grades four to eight submitted posters to illustrate the history of energy technologies, how power will shape the next millennium, or its impact on daily life.

The top three posters in each of two categories — grades 4 to 6 and grades

The 100-poster exhibit first opened at the DOE's Washington, D.C., headquarters in December.

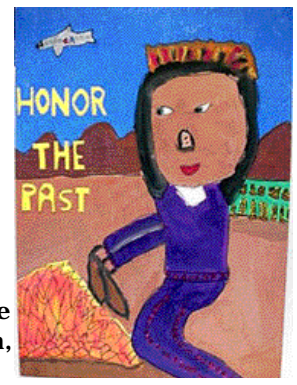
"The Power Art Contest succeeded in helping students discover the history of energy technologies and explore how power will shape the 21st Century," said Energy Secretary Bill Richardson.

The exhibit will remain at BNL through Tuesday, February 29. If you miss the posters at Berkner, you can view them at: http://www.ma. doe.gov/powerart.

— Karen McNulty

**These energy posters are by three Long Beach students who were among 100 chosen to exhibit in a DOE art contest.**

**"Wind: Past, Present and Future" by Jessica Miller, grade 4.**




**"Honor the Past" by Debbie Goodman, Grade 4.**

## PPM Electronic Shopping Mall Opens: Office Supplies First Commodity

With the advent of Web commerce, the way that goods are stocked and purchased has recently changed. Consumers who shop reputable e-merchants are often charged discounted prices, while still getting timely delivery of their goods. To begin taking advantage of e-commerce, the Lab's Procurement & Property Management (PPM) Division invites BNL credit-card holders to the grand opening of its electronic shopping mall, located at PPM's Web site www.dcp.bnl.gov.

The first commodity to be offered by PPM's e-mall is office supplies — which now can be ordered by pointing and clicking at an on-line catalog. PPM's plans are to add electronic storefronts for tools, electrical and electronic items. Instead of stocking office supplies on site as in the past, the Lab now relies on a stationery vendor. Because PPM has obtained discounted prices, the price per item ordered electronically is lower than the price for the same item bought elsewhere. Within a day of accepting an electronic order from BNL, the stationery vendor will deliver the items to the Lab's receiving docks.

To place an order, BNL credit-card holders must enter a password and their credit card information. Each Lab credit-card owner will receive a monthly report of all orders that they have placed with this vendor.

To learn how to place orders electronically, BNL credit-card owners have three sources of information: an on-line help feature of the electronic catalog; on-site training by the vendor, which can be arranged for interested groups; or a toll-free hotline, 1-800-353-3375.

In addition, Ron Ondrovic, Ext. 4553, is available to answer questions about shopping on line with PPM.

## BERA Ski Trip 3/22

*Make paid reservations for the following trip by Monday, March 13 at the BERA Sales Office, Berkner Hall, Monday-Friday, 9 a.m.-1:30 p.m. For more information, call Andrea Dehler, Ext. 3347, or Bob Marascia, Ext. 7779.*

### Day Ski Trip to Brodie Mountain

Ski with BERA on Wednesday, March 22, at Brodie Mountain ski resort in Ashford, Massachusetts.

The trip includes round-trip bus fare and lift tickets for $45 per person. Or you may be able to try the new skier package for $55 per person. The coach bus will leave from the BNL tennis courts at 5:30 a.m. The return trip is planned for 9 p.m.

If requested, an extra pickup and drop off will be made at the park and ride at L.I.E. exit 63.

## HazWoper Training

PACE Union Local 1-431 is scheduling a free 40-hour HazWoper course for BNL employees, contractors, and guests, March 13-17, 8 a.m.-4:30 p.m., in the Bldg. 703 training room. Contact Lou Evers, evers@bnl.gov or Ext. 4417, or Steven Coleman, coleman@bnl.gov or Ext. 2760.

## Cycletrons' Dinner On Valentine's Day

BNL's Cycletrons motorcycle club will be meeting at Boulder Creek Steak House, Rt. 347, in Smithtown, to honor their spouses on Monday, February 14 at 7 p.m. Anyone wishing to join in, call Frank Cetero, Ext. 4220, no later than noon on Monday, 2/14. A club member will reserve the seating for all who RSVP.

## Pick a Student

The first round of student application for the Summer 2000 Energy Research Undergraduate Laboratory Fellowship (ERULF) program will be available for review on an electronic database from Monday, February 14, through Friday, March 10.

This year, the choice will be "first come, first served," so choices should be made early. Addresses and passwords are available from the Office of Educational Programs (OEP), Bldg. 438, or from the departmental education coordinators.

ERULF will run for 10 weeks, June 5-August 11. OEP will pay for students' stipends and round-trip transportation. Sponsoring departments are asked to cost share one month's housing for students who require it.

For more information, contact Louise Hanson, Ext. 5849; hanson2@bnl.gov, or Catherine Osiecki, Ext. 4503, cathyo@bnl.gov.

## Wanted: Physics, Rad. Control Counselors

Volunteers are needed to act as counselors for Boy Scouts who are preparing for the atomic energy badge, part of the Scouts' Merit Badge. Counselors are authorities in their fields, who, up to twice a year, are asked to ascertain if two or more scouts in their home area have achieved the level of understanding required by the merit badge.

Through the Ambassador program in BNL's Community Involvement, Government and Public Affairs, BNL physicists and radiation control specialists are linked with scouts who are taking the atomic energy badge. To volunteer, or for more information, contact Elaine Lowenstein, Ext. 2400, elowenstein@bnl.gov.

## Demos

### CTP Wireless, 2/16

On Wednesday, February 16, from 10 a.m. to 2 p.m. in Berkner Hall lobby, CTP Wireless will discuss the AT&T corporate cellular rate that it offers BNLers.

Service plans include one with airtime rates of 20 cents per minute and 40 minutes of airtime at $19.99 per month, 20 percent off airtime charges, and unlimited off-peak airtime for an additional $4.99 per month. Free features include a digital phone, caller ID, voice mail notification, numeric paging, and more. For more information, call Dennis Lamm or Elizabeth Clifton, 585-2900.

•

### Rent-a-PC Demo 2/16

Rent-a-PC will be in Berkner Hall on Wednesday, February 16, 11 a.m.-2 p.m., to discuss short-term computer rentals for BNL employees.

Rent-a-PC provides desktops, notebooks, LCD projectors, servers, etc., for a day, a week, a month or more. They offer immediate availability as well as local delivery, setup and on-site support. Equipment is pretested, delivered and installed with a "no excuses" guarantee. For more information, call 273-8888.

•

### Sam's Wholesale Club, 2/17

On Thursday, February 17, from 11 a.m.-1:30 p.m. in Berkner Hall lobby, Sam's Wholesale Club will promote a membership drive, with a special offer of a one-year membership for $37.89, which covers one primary and two additional cardholders.

•

### Omnipoint, 2/18

Omnipoint Communications will be in Berkner Hall on Tuesday, February 15, 10 a.m.-2:30 p.m., with special rates for BNLers buying digital PCS wireless services on Omnipoint's GSM network.

Service plans include free caller ID, voice mail, SMS messaging, and FOXNews headlines. Plans include one $15.99 monthly with free phone, or 40 free minutes at $17.99 monthly, or other choices. Options also include international calling and roaming. Call Richard Goll at (631) 343-5900.

Roger Stoutenburgh

**Members of the BNL Gospel Choir are: (seated at the piano) Ojettia (O.J.) Bright; (front, from left), Joyce Moore-Harding, Ella McLean, Barbara Kponou, Nancy Manning, Frances Ligon, Sydell Lamb, Kathryn Clifford, guitarist Richard (Gary) Langhorn; (back, from left) Ronald Manning, George (Buzz) Rundlett, Charles Johnson, Margie Anderson, Charles (Randy) Edwards, Vanessa Crump, and Arthur (Skipper) Anderson. Not present were Alisha Edwards, Kenny Dyson, drummer Kenneth Bell, John Ligon, William Sells, Dollie Johnson, and April Gray.**

# The BNL Gospel Choir

Historically, gospel music has been considered as "black music," because it sprang from African-American religious expression. "But gospel music moves beyond culture and typical religious setting," says Frances Ligon, a founder member of the BNL Gospel Choir. "Gospel music is not what's written on the paper, it's what your experience is. Our choir's hope is that this music builds bridges."

The bridges built by music can help different communities to become more aware of other cultures, Ligan believes. "People outside the black culture often assume that the events organized for Black History month are not for them. But, in reality, the programs that allow African Americans to learn about themselves and their history can also educate the general community."

The BNL Gospel Choir, formed in 1991, is comprised of BNL employees, retirees, and their families. The group has participated in more than 15 community concerts and programs annually, with highlights that include presentations to local nursing, adult, and veteran homes; school district programs, Long Island University, and Brookhaven's Toys 4 Tots.

Upcoming events include presentations during assembly at Little Flower, Wading River, on February 16, and at Philips Avenue School, Riverhead, on February 29. The choir will also be singing on Thursday, February 24, in a program that will be attended by participants at the Community College Institute Workshop 2000, organized by BNL's Office of Educational Programs.

To join the choir, contact Ligon, Ext. 3709, or Sydell Lamb, Ext. 3389. Membership is open to all Lab employees, subcontractors, guests, facility users, and their families. Rehearsals are held in Berkner Hall on Mondays at 5:15 p.m.

## SOS: Blood Drive 2/14

### *Save a Loved One This Valentine's Day*

An emergency blood-donor appeal has been declared. Primarily because of the flu epidemic, less than a two-day supply of blood is available although a five-day supply is needed to meet normal patient and hospital demands.

To help restock Long Island's blood supply, BNL is holding a Blood Drive on Valentine's Day, Monday, February 14, from 9:30 a.m. to 3 p.m. in the Brookhaven Center. No appointments are necessary.

Donors, who must bring photo ID, must be over age 17, weigh a minimum of 110 pounds, and be in good general health. Those who donated at the December drive are eligible to donate again.

For more information, call BNL Blood Drive Chair Susan Foster, Ext. 2888.

## Daffodil Sale

Again this year, BERA will sell bouquets of daffodils to benefit the American Cancer Society. Each bouquet will sell for $6, all proceeds going to the Society. Paid orders are being taken at the BERA Sales Office, weekdays, 9 a.m.-1:30 p.m.

Pick up reserved bouquets 9 a.m.-1:30 p.m. on Thursday and Friday, March 30 & 31, at the BERA Sales Office.

Any extras will be sold on Thursday, March 30, in the Berkner Hall lobby, 11:30a.m.-1 p.m.

For more information, call Andrea Dehler, Ext. 3347.

## Valentine Notes

BEAR - It's just you and me, baby, and I like it like that! You are the best, and I like you too! xos, your bunia

KOKOPELLI - The ride, the slide, rain from the side, and spaceship land too! O'er the many miles I love you. Mr. Breeze

TO MY OLD MAN - I will always love you. Me

DEAR BUDDY GIRL - It will soon be nine that you are mine. Buddy Boy

FLORIN - The meaning of words is so poor and could never say the way we feel about you. Only love has kept us together during our stormy lives. Mihai & Mariana

MOM - It's been fun having you here at BNL all these years. We'll miss you. Love, Joe & DJ

KATE - Fate sure works in strange ways. And it can make life so exciting. Let's hope so. XOXOXO, Me

TO MY VALENTINE MIKE - I'll light the fire, you put it out!! Love you, Duck

TOMKAT - You really know how to make me purr! Happy Valentine's Day, Sweetkat

DONNA - I love you and always will. Love always, L.B.

TO THE LOVE IN MY LIFE - Who is also the greatest wife. I'll always love you. Kisses & Hugs, M.U.S.T.

SARA - Thanks for the 26½ incredible years! Love, Bill

LIFESGR8 - And you're fun. By now you know I love you so and always want to be your Joe.

PIP - I am so happy you're back. I will be 4 eva satisfied. I love you! Your Sweetie

WOW - My heart skips a beat for you! Love, J

TERRY - You've been my friend, lover & husband for over 20 years. Opposites do attract! Now if only you danced! Love, Susie

L.N. - You came into my life and brightened my every day. You've been in my heart ever since! Love, Me

HANDSOME PRINCE - You were always meant to be my destiny. Love, from now until eternity, Your Angel

HI HON - You are still the one to whom I want to go and talk about everything. Luv, Wm

JUN - Happy Valentine's Day! May your love keep racing thru my heart. Love you, Sha

MR. MACHINE - Thank you for everything you do. You are a special man and you make BNL a better place! The Boss

DEAR SJ - 24 roses, 24 kisses, 24 I love yous and 24 Happy Valentine's Days. Love, RJ

DEAR NML - It's almost 3 years and you are still my Valentine. Love, BJL

MY DEAREST LAUREN B. - For you my heart is amethyst; your lips need to be deeply, softly and passionately kissed. N.Y.R.T.S.

LINDA - If sweetness and kindness were asphalt, you would be the Long Island Expressway between exits 68 and 34.

BUNCHES BEAUTY - This day will always hold special meaning for me. Can't wait till we're together for good. Love, Trish

DEAR JOANNE - Happy Valentine's Day. Love always, Quantum p.s.: I'm sorry!

MY THREE SONS - You are the best boys in the whole world! I love you all. Happy Valentine's Day! Mommy

MOTORHEAD - I'm still having fun. Hope you are too.

ROBERT - I can't imagine being married to anyone but you. Thanks for being there when I need you. Christine

DEAREST B. - Love you! Happy Valentine's Day, your Bear

PRINCESS - IWY, INY, ILY and don't you forget it. AIWYN, Baby

GUINEA PIG - experiment yielding positive results; wanna retire you from experimental status and make you my personal pet! Luv-U, S

PM - This year? Get the jacuzzi started, I'll bring the teapot. What more do we need? Let's do it!! LS

BABY CHRISTINA - Happy Valentine's Day in Heaven. We love you and miss you very much. Mommy & Daddy

MY SWEET VALENTINE - Donna Marie, I will love and cherish you forever. Stevie

L - You brought me joy and happiness in your very special way. You've been on my mind everyday since! D

HONEY - Thanks for being my one and only Valentine. Love forever, Til p.s.: See you tonight.

POOKY - You are the love of my life, my best friend, my confidant. I'll love you forever. Always, Stinky

DEAR LS - I love you more than ever. You amaze me all year. Love, Pizzaman

DEAR BUDDY BOY - Happy Valentine's Day. Love, Buddy Girl

SVELTZ - I thank you for all the great, loving years. I pray for many more. You are my love incarnate. Spanky

LITTLE SISTER - Thanks for stepping up when others would not. Emil and Bets would be very proud. Big Brother

MY TWO KIDS - Thanks for all the good times. Love to SWM2GETR. Love U both, Hands Up

TO MY SCUBA **D**ESIRABLE **I**RRESTIBLE **V**IRILE, **E**NCHANTING **R**OMANTIC - My Love Forever, #2

JEFF - Thanks for 25 great years. I'm looking forward to the next 25. Love, Mike

MOM & LARRY - Thanks for being there for me! I love you both. Debbie

TO ALL THE GUYS - Remember love is like a card game: Take her to dinner "clubs," lavish her with romance & "hearts," don't forget the "diamonds," and you'll receive love in "spades."

MY DEAR FAIR MAIDEN - Whose hair is red, dreams of a night in shining armor, sees only the shine on my head. We have had lots of fun, And many a great time. Sends love on this day, Your Bald Valentine

KAYLEE, KYLE & DADDY - I love you all so much! Happy Valentine's Day! Love, Mommy

SNOOKY LUMPS - I love more than I thought was possible. Please be my Valentine. Love, Slick

DUCK - You are the greatest thing that ever happened to me. Love, Santana p.s.: Can't wait.

TO MY BUDDY - My love grows stronger for you everyday. Love you always and forever, your Buddy

JULIE - I know I have a lot of bad habits, but I love you the best of all the rabbits. Love, Dan

Dark Knight, true and brave
Steadfast in love and respect
Wins his lady's heart.

JONATHAN - 4 more months, I can't wait! I'm really happy to have you in my life. Love you! Debbie

CORÉ MIKYUNG - I love you always and I will love you forever. Inkyu

MEEK - I love you. Trubo Tom

TONI - Even if I can't be the lead man in your life, I still love you. Tommy

AMY C.C. - Happy Birthday and Happy Saint Valentine's Day. Love you

CD - Thank you for being a part of my life. My life is enriched because of you. CB

SUNSHINE - What do I love about you? Your bumping into walls, tripping over strands of hair on the floor, holding hands and coffee time. RT

JIF - Sun shining on our loves bloom, the fuel that lights my fire, my soulmate brightens every room, your love keeps lifting me higher.

ROSETTA - After 17 fantastic years, I still wake up in the middle of the night trying to figure out who you are. All my love, Buzzy

HAPPY VALENTINE'S DAY - Hair spun of gold, skin akin to fresh snow, eyes of sapphire blue, to you goes this prose, Miss L.B.

DEAR JOAN - The first 20 years have been great. I know the next 20 will have more love. Love, Lenny

BUD - You complete me. Love you forever, Sunshine

BUZZ - Roses are red, Violets are blue, It's your time to turn in your "love" R2A2. Zim

LADY - I never knew just how hard core you really were. True love will never die for us. Manuel

SHARI - Sorry for the recent past. You are truly the light of my life. I love you.

TO MY LOVE BUN - ⅕ to you, ⅕ to Hayden, ⅕ to Mason, ⅕ to me, and ⅕ to us.

YOU - will always be the one for me. Your Man!

ERIC - Anyone would be proud to have a son like you. Love, Dad Casper

SWEETY - You have filled my heart with love and joy. Thank you for being a part of my life. Pip

HUNBUN - You are my everything. I love you! Love always, Buns

CAROL - Could you please help me to mend a broken heart? You're the best! Love, Dennis

TO KILLER KNEES, SUGAR PLUM PIE & WINNA POOH - Happy Valentine's Day. Mommy and Bapa love you very much! XXXX

DEAR JEANNE - I would be lost without your love. You are the most wonderful woman I could ever imagine. Love, Tim

RED FOX - Through thick and thin, I hope you know how much I love you. Marty Gushka

NEEN - AML AML. J

AJ - Roses are red, violets are blue, my heart groves each time I see you. Loving you always, CJ

JENNY - Thank you for everything. Love, Casper

LOVE DOPS - You have me barefoot, pregnant and in the kitchen. Three girls and mama, you'll get yours. Milking Mom

JOSEPH - Y2K is over and we're still having fun. LIFESGR8 with U. Love, DJ

MY VALENTINES CJ & JJ - Love always, AJ

BEAUTIFUL BETH - Almost two wonderful years together. You're a dream come true. Love you forever, EDS

DEAREST JACKIE - I love you for so many reasons, great and small, but most of all I love you just because you're you. Love, Bruce

TO V.P. 0692 - Thanks for your love and compassion this past year. Love, Noel

PETE B - Hiding in the corner. Jiminey Cricket

SKIPPY & HOONIE - Happy Valentine's Day. Love always, Daddy & Mama

CINDI - The love of my life and so whom I shall ever love. Love always, Joe

SUNSHINE - You're a very good friend. StarShine

SUZETTE - Oh how I long for you! Many kisses, XL

DAD - Congratulations on (finally!) making it to the promised land! I miss you, but this is the best for you. xos, your daughter

BROOKHAVEN BULLETIN

Published weekly by the Media & Communications Office for the employees, facility-users and retirees of **BROOKHAVEN NATIONAL LABORATORY**

**LIZ SEUBERT,** editor
**KAREN MCNULTY,** reporter
**DIANE GREENBERG,** contributor
**ROGER STOUTENBURGH,** photographer

Bldg. 134, P.O. Box 5000 Upton NY 11973-5000
phone (631) 344-2345, fax (631) 344-3368, e-mail bulletin@bnl.gov

On the World Wide Web, the Brookhaven Bulletin is located at www.pubaf.bnl.gov/bulletin.html. A Weekly Calendar listing scientific and technical seminars and lectures is found at www.pubaf.bnl.gov/calendar.html.

**No time to shop? Send personal checks to BNL Food Drive, care of Rita Kito, Bldg. 460, or Donna Wadman, Bldg. 129.**

## Scotch Doubles 3/5

Enjoy a day at the Scotch Doubles Tournament, to be held on Sunday, March 5, at 1:30 p.m. sharp, at Port Jeff Bowl. The cost of $36 per couple includes bowling, prizes, food and baby-sitting services. Application and payment deadline is March 1. After March 1, the cost will be $40.00 per couple. The tournament is open to all.

Obtain applications and information weekdays, 9a.m.-5p.m., from: Tracy Blydenburgh, Bldg. 750, Ext. 4422; Debbie Keating, Bldg. 211, Ext. 3888; John McCaffrey, Bldg. 902, Ext. 2075; Ken Koebel, Bldg. 725, Ext. 7351; and Ron Mulderig, Bldg. 326, Ext. 3084.

### WISE Director Opening

WANTED: Executive Director for WISE, a program for high school and college Women in Science & Engineering. Half-time position to provide overall leadership for program: identify and secure external funding sources, coordinate academic and social activities, supervise student recruitment and selection and curricular initiatives, oversee budget; supervise support staff. Master's degree in research-related discipline and five years of progressively responsible administrative experience required; Ph.D. preferred. Demonstrated commitment to women's education, successful grant-writing and good interpersonal skills required. Salary commensurate with experience. Send resume to WISE Search Committee, Provost's Office, SUNY-Stony Brook, NY 11794-1401 by end February. SUNY-SB is an AA/EEO educator & employer.

## Basketball

**Scores from games on February 3**

| **Heavers 81** | | **Bombers 48** | |
|---|---|---|---|
| Seth LeGrand | 41 | Troy Mayo | 19 |
| Al Boerner | 12 | Doug Aichroth | 13 |
| Greg Mack | 10 | Gerry Shepherd | 8 |
| Steve Jao | 8 | Pat Moylan | 4 |
| Reggie Sanchez | 8 | Pete Ratzke | 4 |
| Tim Powers | 2 | | |

*Three-point shots:* Mayo (5), Boerner (2), Aichroth (1), LeGrand (1), Sanchez (1)

| **Wizards 63** | | **Magic 57** | |
|---|---|---|---|
| Jerry Gaeta | 18 | Shane Stadler | 19 |
| Dorian Mergen | 16 | Mike Fulkerson | 9 |
| Steve Springston | 12 | Rusty Towell | 8 |
| Charlie Edwards | 8 | Mike Grodzki | 6 |
| Jim Garrison | 7 | Hector Machado | 6 |
| Marlin McAvoy | 2 | Jan Chaloupka | 5 |
| | | Mitch Williams | 4 |

*Three-point shots:* Gaeta (2), Garrison (1)

## Road Closure

Beginning Monday, February 14, the access road that runs south of Buildings 701 and 801 will be closed to through traffic for about a month. A portion of the roadway must be removed so that piping associated with the Brookhaven Graphite Research Reactor pile fan sump can be removed.

## No Bulletin February 25

To commemorate Presidents' Day, the Lab will be closed on Monday, February 21. Therefore, there will be no Bulletin on Friday, February 25.

## Volleyball

**League standings as of January 14**

| **Open League A** | |
|---|---|
| Drill. & Excav. Co. | 30-6 |
| Shank, Carry & Throw | 22-14 |
| Far Side | 12-24 |
| Death Volley | 8-28 |
| **Open League B** | |
| Late Entry | 26-10 |
| Bumpin Uglies | 25-11 |
| Monday Nite Live | 15-21 |
| The Stars | 6-30 |
| **Mixed League 1** | |
| I Want Your Sets | 23-10 |
| Set to Kill | 20-13 |
| Scared Hitless | 12-21 |
| Rude Dogs | 11-22 |
| **Mixed League 2** | |
| Safe Sets | 36-0 |
| Spiked Jello | 30-12 |
| Up-Setters | 30-12 |
| Inside Out | 30-15 |
| Nuts & Bolts | 8-34 |
| Group Sets | 6-33 |
| Setups | 4-38 |
| **Mixed League 3** | |
| Six Samurai | 29-4 |
| Upton Ups | 23-10 |
| Net Setters | 17-16 |
| NWO | 15-18 |
| Net Workers | 10-23 |

## N. Gate Opens at Noon

In an attempt to improve traffic flow and reduce both volume and the possibility of vehicular accidents, the Lab will be opening the North Gate at lunch time for a two-week trial period.

From Monday, February 21 until Friday, March 3, the north-bound exit lane will be open from 11:45 a.m. to 12:30 p.m.

The south-bound entrance lane will be open for returning employees from 12:30 p.m. to 1:15 p.m.

Depending on the results and employee feedback this may become permanent operation.

## BERA's Disney Trip

Again, BERA is sponsoring a seven-day, six-night trip to Disney World, from Thursday, October 26, through Wednesday, November 1. The trip is open to BNL employees, guests, users, on-site contractors, and their families. Discounted group-package rates per person are as follows:
4 adults, $982.85; 3 adults, $1,107.45; 2 adults, $1,356.65; 1 adult, $2,104.24; Jr., (10-17) $609.06; child (3-9), $515.11. Rates for ages 3-17 are applicable only when children occupy room with adult(s); maximum five per room, six with child under 3. Children under two are free at Disney, but must pay full airfare, $202. The cost includes airfare, baggage handling, six nights at Disney's Polynesian Resort, unlimited transportation within the Disney World Resort, unlimited admission to Magic Kingdom, Animal Kingdom, Epcot, Disney-MGM Studios, Typhoon Lagoon, Blizzard Beach, and more.

For more information, see the Bulletin, February 4, or call M. Kay Dellimore, Ext. 2873, or Andrea Dehler, Ext. 3347.

## Classified Advertisements

**LABORATORY RECRUITMENT** - Opportunities for Laboratory Employees

MK8559. ADMINISTRATIVE POSITION - Will report directly to the Associate Laboratory Director, Life Sciences. Requires a bachelor's/master's degree in an appropriate discipline, excellent analytical and communication skills (oral and written), proficiency in MS Word and PowerPoint and experience in interpreting and applying DOE and other Federal regulations. Will provide direct administrative support to the ALD/Life Sciences in the areas of interpretation and application of DOE, BNL, and other applicable regulations, coordination of audits and reviews within the Life Sciences Directorate, and oversight and implementation of corrective action plans and/or improvement initiatives. Will be responsible for representing the ALD, as requested, at meetings and planning sessions and acting as liaison between ALD and organizational units reporting to ALD and on special studies and projects. Will also respond to requests for information from all levels of the Laboratory, DOE, and outside organizations. Director's Office.

NS8572. NUCLEAR SAFETY ENGINEERING POSITION - Requires a BS, advanced degree preferred, in engineering or science, or the equivalent; excellent communication skills and a strong background in nuclear engineering. Extensive background with BNL Nuclear Facilities operations and management is required, as is knowledge of DOE Orders, Federal and State regulations, including Price Anderson Amendments Act, 10CFR 830.120 and 10CFR 820. The ability to conduct engineering analysis of complex radioactive nuclide quantification, release fractions and dose consequences is necessary. Will serve as the Nuclear Safety and Operations Subject Matter Expert for BNL's programmatic compliance with nuclear facility safety requirements. Safety & Health Services Division.

**OPEN RECRUITMENT** - Opportunities for Laboratory Employees and Outside Candidates.

MK8556. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. and demonstrated accomplishments in biochemistry or molecular biology; a background in genetics and plant biology preferred. The research involves identifying genes that control cotton fiber properties such as length, strength, and thickness. The work will involve isolating and characterizing fiber-specific promoters or identifying genes that influence fiber traits in segregating populations. More information can be found at http://demeter.bio.bnl.gov/postdoc.html. Under the direction of B. Burr. Biology Department.

MK8369. POSTDOCTORAL RESEARCH ASSOCIATE/ASSISTANT PHYSICIST - Requires a Ph.D. in experimental particle or nuclear physics, experience with data analysis, and knowledge of FORTRAN and C languages and the UNIX operating system. Must be able to work effectively in a group data analysis situation. Knowledge of object-oriented programming techniques, good command of shell programming techniques, and knowledge of some aspects of detector hardware of DAQ highly desirable. The research program is involved with ongoing studies of rare K decays. Will take part in the analysis of a large volume of data from recent AGS runs, participate in the construction, running and analysis of upcoming experiments, and may also contribute to the plans and design for new initiatives. Under the direction of L. Littenberg. Physics Department.

MK8193. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in materials science or physics in the field of corrosion or electrochemistry and comprehensive knowledge of highly localized physical and chemical micro-processes. A background in x-ray absorption and scattering, or electrical/ionic transport in solids is advantageous. The research to be conducted is related to corrosion, passivity, and breakdown processes of coated and uncoated metals and alloys, employing advanced x-ray and novel measuring techniques to determine corrosion and oxidation processes on a scale at which they take place. Under the direction of H. Isaacs. Department of Applied Science.

MK8194. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in physics or materials science with a strong background in transmission electron microscopy. Experience in electron diffraction, imaging, spectroscopy, energy filtering, holography, and computer modeling is desirable. Will participate in research involving nanostructure study and use of the 300 kV state-of-the-art transmission electron microscope facility at BNL. Under the direction of Y. Zhu, Department of Applied Science.

NS8527. ELECTRICAL ENGINEERING POSITION - Requires a BS/MSEE and knowledge and experience in several of the following areas: analog circuit design, high speed digital circuit design, radio frequency circuit design (to 200 MHz), real-time digital signal processing, control system design, high power rf systems. C/C++ programming. Familiarity with Altera MAX + plusII, MATLAB, SPICE, and UNIX are desirable. Collider-Accelerator Department.

NS8421. FIELD ENGINEERING POSITION - (reposting) Requires a BS (MS preferred) in civil, mechanical, chemical, or environmental engineering and 5-7 years' experience in environmental remediation system design, construction, and/or operation and maintenance. Demonstrated knowledge and skills in preparation and/or review of engineering design and specifications, field oversight of environmental remediation related construction and/or decommissioning activities, safety and construction regulations, project management, computer skills and excellent communication skills required. Will provide oversight of remediation work performed by contractors including groundwater and soil remediation and decommissioning activities. Environmental Restoration Division.

NS8424. GIS/CAD GRAPHICS POSITION - (reposting) Requires an AAS/BS degree in geography, geology, or environmental science, or equivalent experience, strong computer skills, and experience in at least two of the following: Adobe Illustrator or similar graphics package; Arc/View or other GIS system; AutoCAD or ArcCad software. Experience in graphics design for the Web is a plus. Responsibilities will focus on the design and production of maps for environmental programs at BNL and CAD support to staff hydrogeologists. Environmental Restoration Division.

DD8557. BIOLOGY ASSOCIATE POSITION - Requires a bachelor's degree in chemistry, biochemistry, or biology and demonstrated laboratory experience. Knowledge of basic molecular biological techniques and basic computer skills are essential. Requires some work with whole plants in the greenhouse and growth chambers and laboratory maintenance activities such as making stock solutions and ordering supplies. The goal of this work is to improve cotton fiber quality by identifying and manipulating genes that affect fiber length, strength, and thickness. Biology Department.

DD8558. RESEARCH COORDINATOR POSITION - Requires a bachelor degree in a life science and either an RN license or CCRC designation. Previous experience in clinical research setting highly desirable. Will coordinate and manage the administrative functions of BNL's Clinical Research Center to assure compliance with Federal regulations and BNL policies governing research involving human subjects. Will supervise CRC support staff and interact with clinical investigators to promote safety and regulator compliance. Medical Department.

NS8154. WRITER/EDITOR POSITION - (halftime/term appointment) Requires a BS degree or equivalent and 5-7 years' experience in procedural and technical editing and writing, familiarity with Netscape/Internet Explorer, MS Word style sheets, and Dreamweaver. Excellent interpersonal communication and team building skills are necessary, as is speed and accuracy in note taking and the ability to synthesize meaning and intent into clearly written documents. Experience with HTML and Web page development and flowcharting software is desirable. Responsibilities include consulting with subject matter experts for the purpose of translating complex technical material into instructional and educational publications for a variety of audiences. Information Services Division.

DD8561. ADMINISTRATIVE/BUDGET POSITION - Requires a bachelor's degree in accounting or business administration or equivalent experience. Under the direction of the Medical Department Budget Administrator, will provide administrative support to the department in the areas of budget planning and costing, labor forecasting and cost distribution, and subcontract management. A working knowledge of Peoplesoft is desirable as is a knowledge of Laboratory policies and procedures. Proficiency in MS Excel, PowerPoint and Word is required The ability to work independently, prioritize responsibilities, and respond to deadlines is critical. Medical Department.

DD8525. TECHNICAL POSITION - Requires a bachelor of technology degree in electronics or equivalent. The candidate should have experience with computer control I/O process control hardware and various software applications. Construction skills and familiarity with Programmable Logic Controllers (PLC) and associated application configuration is highly desirable. Good communication skills and the ability to work in a group setting are important. Responsibilities will include testing, fabrication, calibration, installation, documentation, and fault diagnosis of electronic and process control systems Availability for periodic shift work is required. Collider-Accelerator Department.