

## Samuel Krinsky Wins Free Electron Laser Prize

Samuel Krinsky, Accelerator Physics Group Leader in the National Synchrotron Light Source-II Project, has won the 2008 Free Electron Laser (FEL) Prize. Sponsored by the FEL Conference, which was held this year in Gyeongju, Korea, the prize consists of an award citation, a plaque, and approximately \$3,000.

Krinsky was given the honor "in recognition of his outstanding contributions to FEL science and technology." He is the fourth BNL scientist to receive the FEL Award: Li Hua Yu received it in 2003; Vladimir Litvinenko shared the prize with Hiroyuki Hama of Tohoku University, Japan, in 2004; and Ilan Ben-Zvi was awarded the prize in 2007 along with James Rosenzweig of the University of California, Los Angeles.

An FEL is a research tool that combines the intensity of lasers and the broad wavelength range of synchrotrons, and it is useful for studying a wide variety of materials and chemical reactions. A synchrotron is an accelerator that produces various wavelengths of light for the investigation of materials at the atomic level. BNL is home to the National Synchrotron Light Source (NSLS) and is in the process of designing a new light source, the NSLS-II, which will help to meet future scientific challenges.

"I am honored to receive the FEL Prize," Krinsky said. "The field of FELs provides challenging theoretical questions and exciting applied goals. I have greatly enjoyed collaborating on FEL theory and development with Li Hua and Ilan and Bob Gluckstern of the University of Maryland."

Over the last 25 years, Krinsky and colleagues have contrib-



Roger Stoutenburgh D1810008

uted significantly to developing two types of FELs used in scientific research: the self-amplified spontaneous emission free electron laser (SASE FEL), and the high gain harmonic generation free electron laser (HGFG FEL). In the SASE process, the light the laser emits for experiments starts from noise, or random signals. The SASE FEL can generate very short high-intensity pulses of x-rays, making possible studies of time-dependent processes important in the physical and life sciences.

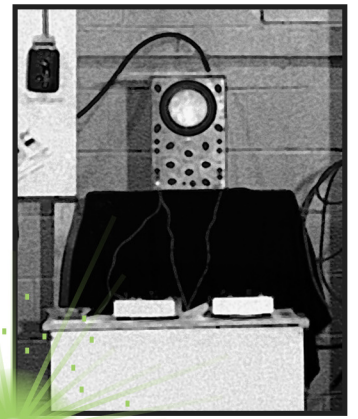
In the HGFG process, which was initiated at BNL, the output light starts from fast-moving electrons interacting with a seed laser that shifts the light to a higher frequency and makes it more coherent, meaning electrons move in a coordinated way to emit light. The intense light of the HGFG FEL reveals the fine details of atomic reactions inside materials and the very fast motions of molecules in chemical reactions, all with unsurpassed precision.

Samuel Krinsky earned a bachelor's degree in physics  
*See Krinsky on pg. 2*

# TENNIS FOR TWO

## 50<sup>th</sup> ANNIVERSARY

### Celebrate — Play Video Games



Tennis for Two was played on this 5-inch oscilloscope screen at the Visitors' Day Instrumentation Division exhibit.

Today, October 24, BNL's Instrumentation Division and the Media & Communications Office invite the Lab community to celebrate the fiftieth anniversary of one of the world's first video games, Tennis for Two, which was invented at BNL for a series of Visitors' Days in 1958.

In 1958, a nuclear physicist named William Higinbotham realized how static and non-interactive most science exhibits were at that time. As the head of Instrumentation, Higinbotham created Tennis for Two hoping that, "it might liven up the place to have a game that people could play, and which would convey the message that our scientific endeavors have relevance for society."

Liven up the place it did! Hundreds of visitors lined up

for a chance to play the electronic tennis game. Visitors playing Tennis for Two saw a two-dimensional, side view of a tennis court on the oscilloscope screen, which used a cathode-ray tube similar to a black and white television tube. The ball, a brightly lit, moving dot, left trails as it bounced to alternating sides of the net. Players served and volleyed using controllers with buttons and rotating dials to control the angle of an invisible tennis racquet's swing.

Higinbotham, who had worked on the Manhattan Project and lobbied for nuclear nonproliferation, could not have dreamed that his game would be a forerunner to an entire industry that less than 50 years later, would account for \$9.5 billion in sales in 2006

and 2007 in the U.S. alone, according to a report published by the Electronic Software Association.

All are invited to attend a celebration of Higinbotham's Tennis for Two today from 11 a.m. until 2 p.m. in Bldg. 400. You can play Tennis for Two, and, in addition, an array of latter-day games. You can also enter a raffle for a replica Atari video game system and other assorted prizes. All are also invited to tour the Instrumentation Division, where Tennis for Two was created and new electronic marvels are designed every day.

— Joe Gettler  
For more information on visiting Instrumentation, see "Employee Lunchtime Tour," on pg. 4, and for more on Tennis for Two, go to [www.bnl.gov/bnlweb/history/higinbotham.asp](http://www.bnl.gov/bnlweb/history/higinbotham.asp).

### BSA Distinguished Lecture

## Alan Guth to Give Talk on Cosmology, 11/6

Alan Guth, the Victor F. Weisskopf Professor of Physics at the Massachusetts Institute of Technology, will give a BSA Distinguished Lecture titled "Inflationary Cosmology: Is Our Universe Part of a Multiverse?" on Thursday, November 6, at 7 p.m. in Berkner Hall. BSA Distinguished Lectures are sponsored by Brookhaven Science Associates, the company that manages BNL, to bring topics of general interest before the Lab community and the public. The lecture is free and open to the public. Visitors to the Lab age 16 and over must bring a photo ID.

In 1981, Guth proposed the theory of the inflationary universe, a modification of the Big Bang theory, which is generally accepted by scientists to explain how the universe began. Nevertheless, the Big Bang theory leaves some questions, and the theory of inflation attempts to answer them. Guth states that a repulsive gravitational force generated by an exotic form of matter brought about the expansion of the universe. He postulates that the universe underwent an expansion of astronomical proportions within the first trillionth of a second of its existence, during which the seeds for its large-scale structure were generated.

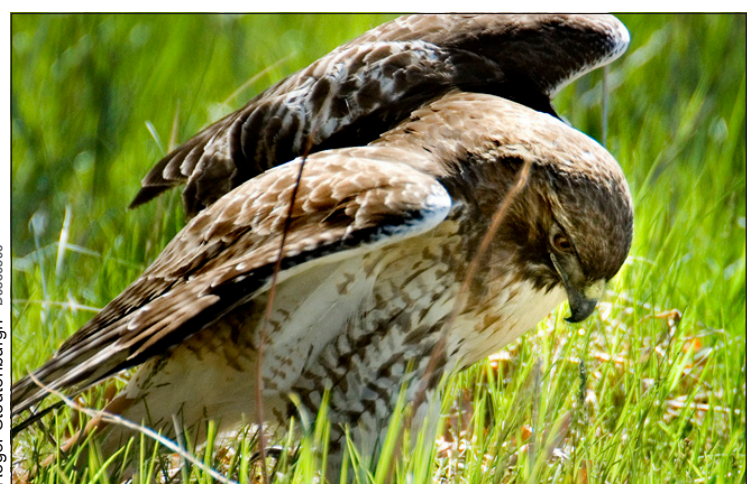


Guth and colleagues have further explored the possibility of mimicking inflation in a hypothetical laboratory, thereby creating a new universe, and they concluded that it might be theoretically possible. If it happened, the new universe would not endanger our own universe. Instead, it would slip through a wormhole, a hypothetical space-time travel shortcut, and rapidly disconnect from our universe. In this talk, Guth will explain the inflationary theory and review the features that make it scientifically plausible. In addition, he will discuss the biggest mystery in cosmology: Why is the value of the cosmological constant, sometimes called the

"anti-gravity" effect, so remarkably small compared to theoretical expectations? Guth will explain how the inflationary theory, combined with other ideas from elementary particle physics and cosmology, can provide a possible explanation for this discrepancy.

Alan Guth earned his Ph.D. in physics from the Massachusetts Institute of Technology (MIT) in 1972. He then held postdoctoral positions at Princeton University, Columbia University, Cornell University, and the Stanford Linear Accelerator Center. In 1980, Guth returned to MIT as an associate professor and rose through the ranks to his current position. He is also a Margaret MacVicar Faculty Fellow at MIT. Guth was awarded the 1999 MIT School of Science Prize for Undergraduate Teaching, the 2001 Franklin Medal for Physics of the Franklin Institute, the 2002 Dirac Prize of the International Center for Theoretical Physics, and the 2004 Cosmology Prize of the Peter Gruber Foundation.

A Fellow of the National Academy of Sciences and the American Academy of Arts and Sciences, Guth is the author of *The Inflationary Universe: The Quest for a New Theory of Cosmic Origins* (Perseus Publishing, 1998).  
— Diane Greenberg



Roger Stoutenburgh D0830506

## BNL 2007 Site Environmental Report Now Available

BNL has issued its 2007 Site Environmental Report. Highlights include significant progress on the environmental cleanup of the site, recognition of pollution prevention initiatives, and reduced environmental effluents and emissions. The document can be found on the Internet at [www.bnl.gov/ewms/ser/](http://www.bnl.gov/ewms/ser/).

The Site Environmental Report is prepared annually to summarize and document Brookhaven's environmental data; environmental management performance; compliance

with applicable DOE, federal, state, and local regulations; and restoration and monitoring programs. It also documents the steady progress toward cleaning up the site and fully integrating environmental stewardship into all facets of the Laboratory's mission. These cleanup and integration efforts are major commitments for BNL, one of ten national laboratories owned and funded by DOE. Highlights from the report are online at [www.bnl.gov/bnlweb/pubaf/pr/PR\\_display.asp?prID=839](http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=839).



## CALENDAR

## OF LABORATORY EVENTS

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

## — EACH WEEK —

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

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

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

**Mondays & Wednesdays: Pilates**  
12:15-1:15 p.m. Mons.; 5:15-6:15 p.m. Mon. & Wed. Rec. Hall. \$65/once/wk., Ext. 5090

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

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

**Tuesdays: Hospitality Coffee**  
10:30 a.m.-noon, Rec. Hall lounge. Restarts 9/9. All welcome. Ext. 5090

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

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

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

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

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

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

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

**Tuesday & Thursday: Aqua Aerobics**  
5:30-6:30 p.m., Pool. Starts Tues., 9/9; Thurs., 9/11. 8-wk session, \$20/once/wk, \$40/twice/wk. Mail chk to BERA.

**Wednesdays: On-Site Play Group**  
10 a.m.-noon. Rec. Hall. Infant/toddler drop-in event. Parents meet while children play. Restarts 9/10. Petra Adams, 821-9238

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

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

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

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

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

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

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

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

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

## Upton Service Station Takes Lost Racing Pigeon Under Its Wing

On the afternoon of Monday, October 13, Bill Widmer was sitting at his desk in Upton's service station when he noticed a pigeon just outside. After pacing for a while, the bird walked in and up to Widmer's desk, and he and the other garage employees, George Charlan and Jim Young, noticed the green and blue tags on the pigeon's legs.

"We recognized that this wasn't a city rat," Widmer said. "This was a racing pigeon."

Widmer picked up the pigeon so he could read the tags more closely. He then gave the bird some water and the only food around, a piece of bread, which the bird eagerly ate.

"All he did for an hour and a half was eat," Widmer said.

While the starving pigeon ate, Widmer and his staff researched the tag numbers online to find the bird was registered with the American Racing Pigeon Union. He then called local bird rescuers, Rosine and Ed Buraczewski, of Holbrook, New York.

The Buraczewskis explained to Widmer that they would try to locate the owner using the green tag numbers. The green tag included the pigeon's registered identification code, given to it a few days after birth, and the blue tag was a countermark band used to time and signal the pigeon's return to the coop during a race. When the Buraczewskis called back, they said that the pigeon belongs to Frank Mello of Cape Cod, Massachusetts, and had been missing for two

days. They offered to pick up the bird and take over its recovery at their pigeon facility in Holbrook and would contact the owner and start the return process as soon as the bird "fattened up."

In the meantime, Widmer built a small cardboard coop with air holes to serve as the pigeon's temporary home and placed bread and water inside the coop. The pigeon stayed there overnight, eating and drinking, and puffed up his feathers to sleep. The next day, Widmer brought it high-protein bird feed.

Widmer was particularly interested in the bird because his father used to race pigeons, so he learned to recognize coloring of these unique birds, selectively bred for their ability to home over long distances.

"We would release six of them and sometimes get seven back," Widmer said. "We would then have to find out who the extra one belonged to, but there was no database in those days."

When the rescuers arrived, Ed Buraczewski quickly examined the bird. He told Widmer that the white spot on the



Roger Stoutenburg/B191008

Bill Widmer with his recuperating feathered friend.

pigeon's upper beak indicated that it was healthy, but he could feel the bird's breastbone, which was a sign that it had been starving. It was lucky to be alive, he said.

"That bird lives in a coop, so he didn't know how to go out and scavenge like the turkeys around here," Widmer said.

Buraczewski explained that the pigeon, which is less than a year old, had been started on its journey from Whitehouse,

**Note:** Homing pigeons were used during World Wars I and II to transport messages and were likely used at the U.S. Army's Camp Upton, which existed in the area of what is now BNL. The 77th Division was organized here and in World War I used the treasured homing pigeon *Cher Ami*, who, despite being mortally wounded, successfully delivered his final message from lost American troops. For more information, see also [www.si.edu/Encyclopedia\\_SI/nmah/cherami.htm](http://www.si.edu/Encyclopedia_SI/nmah/cherami.htm) and [www.bnl.gov/bnlweb/history/camp\\_upton1.asp](http://www.bnl.gov/bnlweb/history/camp_upton1.asp).

## Benefits Open Enrollment Runs 10/20-31

The open enrollment period for medical and dental benefits, the health care and dependent day-care reimbursement accounts, and the vacation buy plan runs October 20 through 31. During this time, eligible participants may add or drop medical and/or dental coverage, change from one medical and/or dental plan option to another, add or drop family members covered, and/or sign up for the reimbursement account(s) and the vacation-buy plan. All changes made during the open enrollment period will be effective on January 1, 2009.

The following changes have been made for 2009:

- You MUST use all your regularly accrued vacation time before your vacation-buy time. This change is based on Internal Revenue Code regulations (see below for more information).
- The maximum annual amount you can contribute to the health care reimbursement account has been increased from \$3,500 to \$4,000.

Employees should have received their 2009 open enrollment booklet via interoffice mail. It provides items to consider when you make your elections, comparisons of the medical and dental programs, and the cost of benefits for 2009. It also contains information on many other benefits available to you through the Lab. Open enrollment information for retirees and those on long-term disability has been mailed to their homes.

You are encouraged to review the information provided in the open enrollment material. You should weigh the medical premium against the coverage the plan provides. You may find that electing a different plan from the one in which you are currently enrolled may meet your needs and lower your medical premiums. If you decide to make changes to medical and/or dental coverage, you must complete forms that are available through the Benefits Office, Bldg. 400B.

Reimbursement account and vacation-buy elections do not carry over from one calendar year to the next, so if you want to participate in 2009, you must sign up for this benefit. To participate, employees must complete an open enrollment form or enroll online. Forms are available through the Benefits Office, Bldg. 400B.

Employees who prefer to enroll online for the reimbursement accounts can do so by logging into PeopleSoft and clicking the following links: Employee Self Service, Benefits, Open Enrollment, and Reimbursement Accounts. For vacation buy plan online enrollment, the links are: Employee Self Service, Benefits, Open Enrollment, and Vacation Buy.

If you enroll online for the reimbursement accounts or the vacation buy plan, you will receive an e-mail confirmation of your election.

For more information, contact the Benefits Office, Ext. 5126 or Ext. 2877.

## Significant Change to Vacation-Buy Program

One of the major changes to benefits for FY2009 involves the vacation-buy program, under which employees can purchase from eight to 40 hours of additional vacation time to use each year. In the past, employees could use their bought vacation at any time during the year. That is no longer the case.

The Internal Revenue Ser-

vice code requires employees to use ALL of their normal accrued vacation before using any purchased vacation. In other words, if you want to keep a bank of accrued vacation through the year, you cannot use your purchased vacation days. If you purchase vacation days and do not use them, you will be reimbursed for those

unused days in your final paycheck of the year.

The Benefits Office recognizes that this change significantly reduces the usefulness and flexibility of the vacation-buy program. We encourage employees to consider this before electing to participate in the program. For more information, contact the Benefits Office, Ext. 5126 or Ext. 2877.

New Jersey, by Bob Adams, a pigeon fancier who performs training tosses, or releases. The young bird must have been caught up with Long Island-bound racing pigeons that had been released at about the same time, less than a mile away. It had probably found the landmarks and surrounding water disorienting and taken an accidental detour from its original 240-mile journey to Cape Cod.

Owner Mello, who started as a pigeon fancier 50 years ago, has raised about 100 pigeons this year.

"It gives me purpose each day to do this," Mello said. "But it happens quite often that the pigeon gets lost on its way back." He said that like any athlete, the racing pigeon expends all of its energy during a race and needs liquids, carbohydrates, and rest.

After its recovery, the pigeon will be delivered back to Adams, who will release it on his next training toss from Queens or Staten Island and notify Mello that the bird is on its way. From there, it should fly back to Cape Cod.

Homing pigeons require a lot of distance training and patience, Buraczewski said. They can also be very valuable, up to several thousands of dollars. It was very fortunate that this little racer touched down in Upton and found Widmer.

"He walked in here because he probably knew I'd take care of him," Widmer said. "We saved him."

— Satya Shanmugham

## 401(k) Max Contribution Increased For 2009

The Internal Revenue Service has increased the amount of money that BNLers may contribute to the BSA 401(k) plan. Beginning January 1, 2009, BNLers may contribute up to \$16,500 during the calendar year to the plan.

Also, those who want to take advantage of the catch-up provision may contribute an additional \$5,500 during calendar year 2009. The catch-up provision is available to plan participants who are, or will be, age 50 or older during the calendar year. (The limits for 2008 were \$15,500 and \$5,000 for regular contributions and the catch-up provision, respectively.)

BNLers should review their current level of contributions and determine if they want to take advantage of the new limits. Remember that by setting aside money in the 401(k) plan on a pre-tax basis, you are lowering the amount of State and Federal taxes that you will pay.

To make a change to your 401(k) election, complete a "BSA 401(k) Agreement for Salary Reduction" form (available at <http://www.bnl.gov/hr/Benefits/retirement/default.asp>) and return the completed form to Payroll, Bldg. 400D). For more information on the 401(k) plan, contact Barbara Soeyadi, Ext. 7516.

## CIGNA Representative

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





Roger Stoutenburgh 00481199

This photo shows some of the younger performers who danced in the 1999 Diwali Festival arranged by the BERA Indo-American Association.

### Celebrate Diwali — Festival of Light, 11/8

The BERA Indo American Association (BERA-IAA) invites all to the annual Diwali Event — the Festival of Light — on Saturday, November 8, starting at 3 p.m. in Berkner Hall. The program will showcase the rich culture and traditions of the Indian subcontinent through music, dance, and the arts, performed by both professional and amateur artists. Authentic Indian snacks will be served during the intermission and an Indian dinner will be offered after the cultural program.

Tickets are \$15/adult; \$9/child. Visit [http://www3.bnl.gov/bera-iaa/diwali08/reserve\\_form.php](http://www3.bnl.gov/bera-iaa/diwali08/reserve_form.php) to reserve and pay for your tickets through PayPal. You are asked to enter your same email address while registering and paying. Registration is not complete unless paid in full. The last date for registration is November 2. Though web-based registration is preferred, tickets can also be purchased at the BERA store in Berkner Hall.

For more information, contact Piyush Joshi, [joshi@bnl.gov](mailto:joshi@bnl.gov) or Ext. 3847, and consult [www.bnl.gov/bera/activities/iaa/](http://www.bnl.gov/bera/activities/iaa/).

### Krinsky from pg. 1

from the Massachusetts Institute of Technology in 1966 and a Ph.D. in high-energy theory from Yale University in 1971. He came to the Lab in 1973 as an assistant physicist, rising to senior physicist in 1985. He was Head of NSLS Accelerator R&D, 1985-2001; NSLS Deputy Chair, 1986-2001; Manager of the Lab's FEL Program, 1999-2002; and took his present position as NSLS-II Accelerator Physics Group Leader in January 2008.

A Fellow of the American Physical Society, Krinsky was responsible for the design and commissioning of the NSLS x-ray storage ring. In 1989, he was among nine BNL scientists and engineers who shared the R&D 100 Award, given by *R&D Magazine* to recognize the top 100 technological achievements of the year, for the invention of the real-time-harmonic closed-orbit feedback system. The system was devised for the NSLS to stabilize the orbit of the electron beam as it circulates around the synchrotron. Krinsky is also a recipient of BNL's 1994 Distinguished Research & Development Award.— Diane Greenberg

For more information on Krinsky's contributions, see [www.bnl.gov/bnlweb/pubaf/pr/PR\\_display.asp?prID=837](http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=837).

### Defensive Driving Course in Two Parts, 10/27 & 30

The next six-hour Defensive Driving (Point & Insurance Reduction) course will be held in two parts on Monday and Thursday, October 27 and 30, in the Bldg. 490 Large Conference Room, 6-9:15 p.m. The course is open to BNL, BSA, and DOE employees, facility-users, and their families. The cost is \$38 per person. Preregistration is required. To register, call Ed Sierra, 821-1013, and leave a message. Include your phone number. For more information, call Sarah Wiley, Ext. 4207.

### Service Anniversaries

The following employee celebrated his 45th service anniversary during July 2008:

- 45 Years —
- \*George Meinken..... Medical

The following employees celebrated service anniversaries during August 2008:

- 35 Years —
- Peter Heotis.....Rad. Contr.
- 30 Years —
- Raymond Karol..... C-AD
- Ronald Longacre..... Physics
- Cornelius Waide..... C-AD
- Charles Trabocchi..... C-AD
- Stephen Musolino.....NNS
- John Woods..... C-AD
- Roy Barone..... Lab. Protec.
- Walter DeBoer..... NSLS

- 25 Years —
- Janice DePass.....Env. Restor.
- Elaine Lowenstein..... CEGPA
- James Murphy..... NSLS
- Charles Hofmayer..... ES&T

- 20 Years —
- Mark McNeill..... C-AD
- Maryellen Meier..... PPM
- Kevin Smith..... C-AD
- Chi-Chang Kao..... NSLS
- Chien-Ih Pai..... C-AD
- John Butler..... C-AD
- John DeBoer..... C-AD
- Anthony Costantini..... Facils. Ops.
- Piyush Joshi..... Magnet
- John Biemer..... Eng. & Utils.
- Fredrick Horn..... SHS
- Mary Brathwaite..... Instrum.

- 10 Years —
- Elizabeth Ginty.....Rad. Contr.
- Keith Klaus..... NLSLS
- Martin Candito, Jr..... C-AD
- Alistair Rogers..... Env. Scis.
- Nikolay Malitsky..... C-AD
- John Triolo..... Instrum.

\*Note: The Bulletin greatly regrets that the name of George Meinken, who joined BNL on July 22, 1963, was inadvertently omitted from last week's list of Service Anniversaries celebrated in July.

### Arrivals & Departures

- Arrivals —
- Joel Vasquez..... C-AD
- Departures —
- None

## Healthfest Events

This is the last week of BNL's annual Healthfest Month. During the month of October, the Laboratory has many events to promote health, fitness and safety. Refer to the calendar for dates, times, and registration requirements.

- Swim\* 10/29**  
400-yard swim  
Time: 11 a.m.-1:30 p.m.  
Location: Pool in Bldg. 478
- Biathlon Swim\* 10/31**  
800-yard swim  
Time: 11 a.m.-1:30 p.m.  
Location: Pool in Bldg. 478

\* Must be 18 or older to participate

Register online for these events at <http://intranet.bnl.gov/healthfest/>. If you do not have computer access, contact Michael Thorn, Ext. 8612, to register. Healthfest T-shirts will be given on first come, first served.

### Employee Lunchtime Tour Today, 10/24 BNL's Electronic Instrumentation on View

Today, Friday, October 24, employees, retirees, and visitors may take the Employee Lunchtime Tour to the Instrumentation Division to see the wonders of electronics as built by BNL scientists. The visiting group will also be able to view the "video arcade" which will be located in the Bldg. 400C lobby in honor of William Higginbotham and his invention of "Tennis for Two" (see pg. 1). No reservations are needed. Meet the group in the upper lobby of Berkner Hall at noon and return by 1 p.m. Contact Elaine Lowenstein, Ext. 2400, if you have any questions.

## BERA Fitness Classes

BERA has announced newly scheduled dates for fitness classes. Advanced registration is required for the following classes. Make checks payable to BERA and mail to the Recreation Office, Bldg. 400.

- Jazzercise:** 8-week session, \$90 for 2x/week\*  
Tuesdays & Thursdays from noon – 1 p.m. at the Recreation (Rec) Hall (Bldg. 317)  
Tuesdays: Nov. 18, 25, Dec. 2, 9, 16, Jan. 6, 13, 20  
Thursdays: Nov. 13, 20, Dec. 4, 11, 18, Jan. 8, 15, 22  
\* Includes option to use Holbrook & Wading River locations in addition to Tues/Thurs classes)
- Aqua Aerobics:** 8-week session, \$20 for 1x a week, \$40 for 2x/week  
Tuesdays & Thursdays from 5:30 – 6:30 p.m. at the Pool (Bldg. 478)  
Tuesdays: Nov. 4, 18, 25, Dec. 2, 9, 16, Jan. 6, 13  
Thursdays: Nov. 6, 13, 20, Dec. 4, 11, 18, Jan. 8, 15
- Pilates:** 8-week session, \$65 for 1x a week, \$80 for 2x/week, or \$130 for 3x/week  
Mondays from 12:15 – 1:15 p.m. at the Rec Hall (Bldg. 317):  
Nov. 3, 10, 17, Dec. 1, 8, 15, Jan. 5, 12  
Mondays and Wednesdays evenings from 5:15 – 6:15 p.m. at the Rec Hall (Bldg. 317)  
Mondays: Nov. 3, 10, 17, Dec. 1, 8, 15, Jan. 5, 12  
Wednesdays: Nov. 5, 12, 19, Dec. 3, 10, 17, Jan. 7, 14

## TIAA-CREF One-on-One Retirement Counseling

A TIAA-CREF consultant will visit BNL on Monday, 11/3; Friday, 11/7; Monday, 11/10; and Friday, 11/14, to answer employees' questions about their financial matters. The consultant will help you: understand the importance of protecting your assets against inflation, find the right allocation mix, learn about TIAA-CREF retirement income flexibility, and compare life-time income vs. cash withdrawal options. For an appointment, call 516-454-4025 or schedule on-line at [www.tiaa-cref.org/moc](http://www.tiaa-cref.org/moc).

## Informal French For All Levels

Sponsored by English for Speakers of Other Languages, Galina Polyanskaya gives free informal French classes for people interested in learning or improving their French language skills. Now, the beginners can select from two levels of skill, "low" and "high." Classes, which are held upstairs at the Recreation Building, are scheduled as follows:

- Wednesdays:** High Beginners from noon-1 p.m.; Low Beginner (very basic), 1-2 p.m.
  - Thursdays:** 5:30-6:30 p.m. Intermediate – Advanced
- Contact Galina Polyanskaya for more information and to register at: [galpol@mail.ru](mailto:galpol@mail.ru).

## BWIS Wine & Cheese Party, 11/6

All BNLers are invited to the Brookhaven Women in Science (BWIS) Wine & Cheese Party on Thursday, November 6, from 5:15 p.m. to 7 p.m. in the Recreation Hall, Bldg. 317, in the apartment area. BWIS holds this event annually to thank all who have helped with and supported BWIS programs, welcome new members, and introduce the new executive board to the Lab community.

Both men and women are welcome to join BWIS. The group's primary mission is to promote the advancement of women in the scientific professions. More information about BWIS and the membership application form is available at the BWIS website: [www.bnl.gov/BWIS/](http://www.bnl.gov/BWIS/). For more information about the November 6 event, contact Stephanie LaMontagne, Ext. 7141 or [stephl@bnl.gov](mailto:stephl@bnl.gov).

## CALENDAR

Friday, 10/24

**\*Celebrate Video Game's 50th!**  
11 a.m.-2 p.m. Bldg. 400 lobby. 50th anniversary celebration of William Higginbotham's design of one of the world's first video games, "Tennis for Two." Play this game, rebuilt by Instrumentation, and play other video games. Also, tour Instrumentation. See below and pg. 1.

**\*Employee Tour – Instrumentation**  
Noon-1 p.m. Berkner Hall lobby. See related event in Bldg. 400 above. Meet in Berkner lobby to be taken to Instrumentation to see how BNL scientists build electronic instruments. No reservations are necessary. See notice at left.

**Talk: Fighting Nuclear Weapons' Spread**

1 p.m. Hamilton Seminar Room, Bldg. 555. Mona Dreicer, Lawrence Livermore National Laboratory, will talk on "Fighting the Proliferation of Nuclear Weapons: Helping Ourselves by Helping Others." All are welcome to this free talk, sponsored by BNL's Nonproliferation & National Security Department.

### — WEEK OF 10/27 —

Monday, 10/27

**\*Defensive Driving, Part I**  
6-9:15 p.m. Bldg. 490, Large Conference Rm. See below, left.

**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.

Thursday, 10/29

**\*Defensive Driving, Part II**  
6-9:15 p.m. Bldg. 490 Large Conference Rm. Part II of two-part course. See below, left.

### — WEEK OF 11/3 —

Thursday, 11/6

**\*BWIS Wine & Cheese Party**  
5:15-7 p.m. Recreation Hall in the apartment area. See notice, below, left.

**\*BSA Distinguished Lecture**

7 p.m. Berkner Hall. "Inflationary Cosmology: Is Our Universe Part of a Multiverse?" Presented by Alan Guth, MIT. All are welcome to this free public lecture. Visitors to the Lab of 16 and over must carry a photo ID. See pg. 1.

Saturday, 11/8

**\*Celebrate Diwali, Festival of Light**  
3 p.m. Berkner Hall. The BERA Indo American Association invites all to celebrate Diwali in a program of music and dancing that presents the culture and traditions of the Indian subcontinent. Indian snacks and dinner will be offered as part of the event. Tickets: \$15/adults, \$9/children. See notice above, left.

### — WEEK OF 11/10 —

Tuesday, 11/11

**Veterans' Day, Lab Closed**

The Lab will be closed in honor of Veterans' Day. No Bulletin on Friday, 11/14.

Wednesday, 11/12

**442nd Brookhaven Lecture**

4 p.m. Berkner Hall. Elaine DiMasi of the National Synchrotron Light Source Department will talk on "Which Came First, the Egg-Shell or the Egg? Answering Riddles About Biomineralization." All are welcome to this free talk, open to the public. Visitors to the Lab of 16 and over must carry a photo ID.



## 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/](http://www.bnl.gov/HR/jobs/).

To apply for a position, go to [www.bnl.gov](http://www.bnl.gov). Select "Job Opportunities," then "Search Job List."

**OPEN RECRUITMENT - Opportunities for Lab employees and outside candidates.**

**COUNTERINTELLIGENCE OFFICER (A-9) -** Requires a bachelor's degree in a related field; masters degree desirable, and at least 20 years of experience in intelligence, counterintelligence, or criminal investigations at the Federal, state, or local government level. Some management or program experience in counterintelligence or a related field is required as is considerable skill in interview techniques and oral and written communications. Experience in developing and conducting training and briefing programs; modern computer skills and familiarity with word processing, secure data bases, presentation, and e-mail applications are necessary. Must successfully complete a rigid background check to include a limited-scope polygraph examination concerning National Security issues. U.S. citizenship and the ability to obtain and maintain DOE "Q" and "SCI" Access Authorizations is required. Candidates successfully competing for this position may be requested, as a pre-condition to an offer of employment, to submit to the above polygraph examination. Responsibilities include developing, implementing, managing, enhancing, and maintaining all required elements of the Counterintelligence Program for the NRCO. Conducts briefings and debriefings of travelers to foreign countries, hosts of foreign national visitors and assignees, and employees with significant foreign national interactions. Conducts CI Awareness training for all categories of employees. Coordinates with and assists the U.S. Intelligence Community members in queries and investigations. Provides assistance and support for activities of CI concern within the Unclassified Foreign Visits and Assignments, Official Foreign Travel, OPSEC, Information Security, Security Education and Awareness, and Personnel Security Programs. Counterintelligence Office. Apply to Job ID# 14655.

**COUNTERINTELLIGENCE ANALYST (A-8) -** Requires a bachelor's degree; master's degree desirable, and at least two years of experience as an U.S. Intelligence Community Analyst, having reached the GS-11 level. Experience must include conducting tactical and strategic analysis, preparing intelligence reports, and a demonstrable record of success relative to analytic, investigative, and strategic integration. Candidates possessing additional related private sector experience are preferred. Modern computer skills and familiarity with word processing, secure data bases, presentation, and e-mail applications are necessary. Must successfully complete a rigid background check to include a limited-scope polygraph examination concerning National Security issues. U.S. citizenship and the ability to obtain and maintain DOE "Q" and "SCI" Access Authorizations are required. Candidates successfully competing for this position may be requested, as a pre-condition to an offer of employment, to submit to the above polygraph examination. Will develop, implement, manage, enhance, and maintain all required analytic and investigative elements of the Counterintelligence Program, under the purview of the Northeast Regional CI Office, including Brookhaven National Laboratory, the DOE Brookhaven Site Office, the Laboratory for Laser Energetics, Rochester University, the Princeton Plasma Physics Laboratory, Princeton University, and the DOE Princeton Site Office. Counterintelligence Office. Apply to Job ID# 14657.

### Motor Vehicles

06 VW GTI - Red, 2.0L turbo, 6spd manual pkg 2, leather, AM, FM, CD Sirius, heated seats, grt MPG, like new. 18K mi. \$19,000/neg. Frederick, Ext. 3498 or 294 7366.

02 BUICK RENDEZVOUS - 4-door, all-wheel drive, seats 6, all power, well-maintained. \$7,000/neg. 744-3203.

01 CHEVY BLAZER - 6cyl, 4.3L, 2dr, a/c, 4wd, am/fm, cass/cd, p/b, p/l, p/s, p/w, abs. 120K mi. \$3,700. Ext. 4958 or 399-5606.

99 SUBARU LEGACY OUTBACK - runs well, gd cond, nds new gas tank, 5spd awd, a/c, p/w, p/l, cd/cass. \$3,500/neg. 874-3652.

99 HYUNDAI ACCENT L - 4cyl, 5spd, 2dr, hbk, fwd, am/fm/cass 28/37mpg, 2 minor dents, needs tires, runs well. 94K mi. \$1,500/neg. Ext. 7465.

99 DODGE INTREPID ES - a/t, a/c, pwr l/w/s/b, abs, v6, 3.2L, 4dr, s/roof, am/fm/cd, alarm, well maint., must sell. 82K mi. \$3,000/neg. Ext. 3474 or 775-0099.

98 CHEVY SUBURBAN LT - clean truck, 5.7L, 4x4 tow pkg., loaded mpg, f&r a/c lther, 7-seater. 108K mi. \$5,250. 294-7366.

97 DODGE CARAVAN SE - v6, ac, p/w, c/c, p/l, am/fm/cass, 2-slide drs, 3 row seats (2 remove), gd cond. 149K mi. \$2,100/neg. Denise, Ext. 7860.

92 DODGE NEON - Runs well. 124K mi. \$900/neg. Ext. 7266.

TRUCK-TOOLBOX-LADDER-RACK - aluminium diamond-plate tool-boxes, 1large & 2 side & ladder-rack - 300. Ext. 4566.

### Boats & Marine Supplies

VENTURE TRAILER - '04, Galvanized all roller trailer, up to 24 ft. boat, 4800 lbs capacity, dual axle, brakes, \$2,150. Ext. 5436 or 774-3115.

### Furnishings & Appliances

COMPUTER WORKSTATION - Bush, excel. cond. w/2 tables, will email photo, already disassembled, \$200. 278-1905.

Student desk, with hutch and matching chair, all very gently used, \$100. Large dark pine desk, \$60. Ext. 7461.

KITCHEN RANGE HOOD, COOKTOP - Broan QT236 36" biscuit rge hood, Verona 24" biscuit gas cktop, both very good cond. \$75 each. Ext. 4575 or 473-3604.

VACUUMS - 2 Dirt Devils; 1 Hoover all w/gd cond., extra parts, \$5-\$25. 924-3522.

WALL CLOCK - quartz, oval, light oak trim, 10.5w x 12l, ask/\$25. 281-4459.

### Audio, Video & Computers

MONITOR - 19" Compaq flat screen mon. w/spkrs, new in box, \$150. Ext. 3884.

NINTENDO Wii - rarely used, 2 controllers, 1 nunchuk, mario kart w/2wheels, mario party, wii sports, wii play, internet and more. \$350 obo. Bill, Ext. 3146.

STEREO SYSTEM - Technics w/g spkrs, CD and cass., plus am/fm radio. ask/\$175. Ext. 7461.

### Sports, Hobbies & Pets

CANNON CAMERA - SLR 35mm Eos Elan 7NE, professional quality, body only, focus, ask/\$300. Melanie, Ext. 3906.

FISH TANKS - 30 gal glass hexagon, blk stand, lighted lid, no bulbs, heater, 2 filters, \$235/obo; 20 gal acrylic rectangular w/2 aqua clear filters, \$50/obo. 744-7360.

### Miscellaneous

ALTO SAXAPHONE - Yamaha YAS-23 in excel. cond., \$600/neg. Maryann, Ext. 4705 or 929-4978.

CAR SEAT - Evenflo Infant w/3 bases, \$40/all, will sell sep. pic. avail. mb@bnl.gov. Maryellen, Ext. 3670.

COMPUTER CHAIR - blk w/high back, hardly used, \$25, pic. avail. mb@bnl.gov. Mary, Ext. 3670.

FURNITURE - table 5 chairs, needs refinishing; weight set, dumbbells, bench, various toys, \$40. Ext. 2695.

GIRL CLOTHES - 12-18 mos., 4 yrs old, excel. cond., name brand, most \$1/ea., mb@bnl.gov. Maryellen, Ext. 3670.

LENOX HALLOWEEN GIFTWARE - candy dishes, pumpkins, votives. Kathy, Ext. 2933.

PORTABLE BASSINET - sm., folds, has zippered net to protect baby, hardly used, pic. avail., \$20. Maryellen, Ext. 3670.

PUPPIES - Champion Bloodline Pitbull Terriers, 9 wks old, Matt, 484-1809.

SPRINKLERS - poly pipe, heads, repair, installation, winterize. 284-2277.

YAMAHA 350 FLUTE - Intermediate level, sterling silver head, open/closed hole great upgrade from student flute, \$400. Laura, Ext. 4660 or 807-0457.

### Happenings

LI SINGLES EXPO - Sun 11/2 Marriot, Islandia, LIE Ext 58, Seminars, shows, sp dating, dancing. \$20/dr [www.weekend-dating.com](http://www.weekend-dating.com). 305-448-7976.

SCALLOP DINNER - Cutchogue Methodist Church, Election Day, 11/4. 5 p.m., 6 p.m., 7 p.m. seatings, \$21/adult \$9/child. Bob, Ext. 2451.

### Farewell Gathering

TOM MULLER - Thursday, October 30 at 6 pm at off site restaurant. Call for details. RSVP: Oct 27. Linda, Ext. 4887.

### Free

CAT FOR ADOPTION. - "LOLA" is a very clean, lovely cat, neutered and healthy. We are moving out of town. Mihai, Ext. 2765.

### Wanted

ARC OR WIRE FEED WELDER - Working or not. reasonable price or free, also need welding supplies. Gary, Ext. 7779.

DOG CRATE - lg., gd. shape, free or sm. fee. Christine, 455-3194.

### Lost & Found

SCARF - Found in parking lot of building 1005 on 10/16. Scarf is colored orange, brown, and beige. Marie, Ext. 4727.

### For Rent

FARMINGVILLE - furn. bdrm, 14'x16' in lg house, full kit., l/r, d/r, share bath, incl. cable, wifi, phone. \$595/mo. 513-8275.

MEDFORD - 3-bdrm house, 1 bath, l/r, d/r or den, newly renov. w/new windows/bath, close to Lab and LIE. \$1,900/mo. 289-9727.

MIDDLE ISLAND - 1 bdrm, lg remodeled high bsmt apt, pvt ent/drwy, incl. all, 10 min to Lab, clean, quiet, strictly no smkg/pets, BNL or Stony Brook employee only. \$900/mo. Istvan, Ext. 7020 or 880-3152.

MIDDLE ISLAND - 4 room bsmt apt., all util. incl. cable, 1 mo. rent/sec., avail. now. \$800/mo. 732-1642.

RIDGE - sunny studio, eik., priv., deck, incl. cable, single person only, min. to Lab. \$800/mo. 775-0828/835-4091.

ROCKY POINT - 2 bdrm. apt., heat, hot water incl. off-st. prkg, s/facing, walk to stores. 15 min. to Lab, mcbennet@umich.edu \$1,200/mo. Marcus, Ext. 4962.

SOUND BEACH - 4 bdrm Col. house, 2 bath, skylight, d/w., w/d, 15 mi. to BNL, 10 min to beach, Miller Pl. SD. \$2,050/mo. Vladimir Butko, Ext. 2485.

### For Sale

BELLPORT - 4-BR ranch, 2 bath; l/r & sep. den w/back-to bk firepl; eik; oak fls; priv. deck, large laundry rm; fin bsmt with 4th BR, bar, bath, 2 more rms; gar, 2 shds w/elctr; sprinklrs. \$375,000 949-7797.

RIDGE - cust. Victorian, 3,000 sq.ft., mins to Lab, 4/5 BR, 2+1/2 bath, jacuzzi, h/wd flrs, cent. air, full bsmt w/sep ent., 2-car gar, 1 acre+, adjacent to protected land. \$549,000/neg. 255-8445.

SHOREHAM - 4 bdrm., 2.5 bath Col., frml l/r, d/r, den w/fp, lg. kit. w/dinette, fin. bsmt, 12x 20 deck, igs, SWRSD, much more, 7 mi. to Lab. \$529,000/neg. Don, Ext. 2253 or 631-821-3320.

### On Site Services

CAFETERIA - New: packed meals for home, have soup, salad, entrée or dessert packed for takeout and pick up on your way home; Vegan Recipe Contest, submit your vegetarian/vegan recipe with your name, Lab Ext., in the suggestion box, located at the middle register. Free lunch if we use it! Ext. 3541.

ENTERPRISE CAR RENTAL - has moved to new Research Support Bldg., Bldg. 400 lobby. Cars, pick-ups, vans available for short or long rental. Discounted rates for BNLers. Ext. 4888.

SERVICE STATION - Check out our inexpensive gas prices. We also do NYS inspections, oil changes, repairs while you are at work. Ext. 4034.

## Save the Date!

## Adopt-a-Platoon Fundraiser, 11/5, 6, 7

The Brookhaven Veterans Association (BVA) will hold a fundraiser at Berkner Hall, 11 a.m.-1 p.m., on Wednesday, Thursday, and Friday, November 5, 6, & 7, all proceeds to be donated to help support service members. At the fundraiser, you can view a range of military logo items for men, women, and children, such as camouflage apparel, T-shirts, hats, jackets, etc. — one example of each item — which you can order and pay for right away. Your order will be sent in time for holiday gift-giving. To preview the form and photos of the items that will be available, see [www.bnl.gov/bera/activities/va/Adopt\\_A\\_Platoon.asp](http://www.bnl.gov/bera/activities/va/Adopt_A_Platoon.asp).

## Volunteers Can Help Give a Great Start To BNL's 2008 United Way Fund Drive

Each year, BNL collects for the United Way of Long Island, an umbrella organization that ensures that a very wide range of service agencies on Long Island get extra, often essential, funding. An important part of the BNL campaign is the Volunteer Days Program, which this year runs October 23 through December 31.

In this Program, BNL community members who perform volunteer work and activities can help the United Way fundraising effort by reporting their volunteer hours. For every hour volunteered between October 23 and the end of December, BSA will donate \$20 to the Lab's Long Island United Way campaign, with a ceiling of \$10,000. To join the program, contact Volunteer Days Program Coordinator Mary Campbell, [maryc@bnl.gov](mailto:maryc@bnl.gov) or Ext. 3927, who has the volunteer work receipt forms to fill out and submit.

All sorts of volunteerism qualifies for the BSA donation: for example, work in volunteer firefighting, soup kitchens, meals-on-wheels, hospitals, church activities, Habitat for Humanity, activities to benefit handicapped children, teaching, mentoring, lecturing, coaching, scout leading, and more.

To encourage participation in volunteer activity, with supervisory approval, an employee may make a one-time request of an hour's work time to perform volunteer work. To qualify for the BSA donation, a minimum of two hours is necessary, one work hour, and one from your own time. Thereafter, you may volunteer as many hours as you wish on your own time. If you would like information on volunteer opportunities, contact Campbell at Ext. 3927.

## Artists, Photographers: Free Workshop On Mounting, Framing, 10/30

Having your precious photographs or artwork framed costs a lot. The Camera Club will sponsor a demonstration by professional artist Yvonne Berger on digital framing, matting, canvas, and adding text to photographs using Photoshop. Useful information for both artists and photographers on mounting materials, mat cutting, and other techniques will be demonstrated. The workshop will be held on Thursday, October 30, at 5:30 p.m., in Berkner Hall, Room B. For more information, call Ripp Bowman, Ext. 4672.

## Wanted: BNL Art and Crafts for Fall Show

BNL artists, photographers, sculptors, and crafters — your most beautiful work is needed for the BNL Art Society's upcoming Art and Crafts Exhibit to be held at Berkner Hall from Monday to Wednesday, November 24-26, 11:45 a.m. -1:30 p.m. An evening reception with refreshments will also be held on Monday, November 24, 5 - 7 p.m.

BNL employees, retirees, facility users, guests of BNL, and family members 15 years and older, may all contribute. More than one piece may be entered

by an exhibitor, to be shown as space permits.

Exhibits for the show must be brought to Room C, Berkner Hall, the afternoon of Friday, November 21, 2-4:30 p.m. To be included in the program, complete a form for each work entered and return it by Monday, November 10, to Bob Chrien, Bldg. 510A, or e-mail the information requested below to [chrien@bnl.gov](mailto:chrien@bnl.gov). Late entries may be accepted, but your name can only be on the program if your information comes in on time, so please do not forget.

### Entry Form for BNL Art, Craft Exhibit, November 24-26

Name: \_\_\_\_\_ Home Phone: \_\_\_\_\_

BNL Contact: \_\_\_\_\_ BNL Ext: \_\_\_\_\_

Type of art/craft (painting, sculpture, photo, pottery, quilting, etc.): \_\_\_\_\_

Title of Work (if there is a title): \_\_\_\_\_

Description (medium, material, size, etc.): \_\_\_\_\_

Please return to Bob Chrien, Bldg. 510A, or send the same information to [chrien@bnl.gov](mailto:chrien@bnl.gov), both by 11/10.



Joseph Rubino 12/07/08



# TENNIS FOR TWO

## 50<sup>th</sup> ANNIVERSARY



William Higinbotham's Tennis for Two was played on a five-inch oscilloscope screen at the Visitors' Day Instrumentation Division exhibit. Many recall lines of people wrapped around Brookhaven's gymnasium waiting to play the game.

Before the era of electronic ping pong, hungry yellow dots, plumpers, mushrooms, and fireflowers, people waited in line to play video games at roller-skating rinks, arcades, and other hangouts. Fifty years ago, before either arcades or home video games, visitors waited in line at Brookhaven National Laboratory to play "Tennis for Two," an electronic tennis game that is unquestionably a forerunner of the modern video game.

Tennis for Two was first introduced on October 18, 1958, at one of the Lab's annual visitors' days. Two people played the electronic tennis game with separate controllers that connected to an analog computer and used an oscilloscope for a screen. The game's creator, William Higinbotham, was a nuclear physicist who had worked on the Manhattan Project and lobbied for nuclear nonproliferation as the first chair of the Federation of American Scientists.

### Tennis Anyone?

Higinbotham realized how static and non-interactive most science exhibits were at that time. As head of Brookhaven Lab's Instrumentation Division, he would change that. While reflecting on his creation, Higinbotham wrote, "it might liven up the place to have a game that people could play, and which would convey the message that our scientific endeavors have relevance for society."

Visitors playing Tennis for Two saw a two-dimensional, side view of a tennis court on the oscilloscope screen, which used a cathode-ray tube similar to a black and white television tube. The ball, a brightly lit, moving dot, left trails as it bounced to alternating sides of the net. Players served and volleyed using controllers with buttons and rotating dials to control the angle of an invisible tennis racquet's swing.

Liven up the place it did! Hundreds of visitors lined up for a chance to play the electronic tennis game. And Higinbotham could not have dreamed that his game would be a forerunner to an entire industry that less than fifty years later, would account for \$9.5 billion in sales in 2006 and 2007 in the U.S. alone, according to a report published by the Electronic Software Association.

In 1982, Creative Computing magazine picked up on the idea that Tennis for Two might be the first video game ever and it

published a story on the game in that year's October issue. It credited Higinbotham as the inventor of the video game — until they heard from someone who could document an earlier game. The same story was reprinted in the Spring 1983 issue of Video and Arcade Games, a sister magazine to Creative Computing.

### How Did He Do It?

The "brain" of Tennis for Two was a small analog computer. The computer's instruction book described how to generate various curves on the cathode-ray tube of an oscilloscope, using resistors, capacitors and relays. Among the examples given in the book were the trajectories of a bullet, missile, and bouncing ball, all of which were subject to gravity and wind resistance. While reading the instruction book, the bounc-

screen between 10 and 17 inches in diameter was used and players could select variations of tennis on the moon, with low gravity, or on Jupiter, with high gravity.

### Higinbotham, the Person For the Job

Considering Higinbotham's background, Tennis for Two was a natural outgrowth of his schooling and work experience. During his senior year at Williams College, he used an oscilloscope to produce a system to display the audio modulation of a radio station's high frequency radio output. As a graduate student in Cornell's physics department, he worked as a general-purpose technician, learning the new and rapidly developing field of electronics.

In 1940, Higinbotham joined the staff of the MIT Radiation

in about three weeks, and the two of them took a day or two to debug it. The Lab still has official blueprints dated 1958.

### So, Was Tennis for Two The First?

Higinbotham's Tennis for Two was actually preceded by several other inventions — one in the late 1940s and two in the early 1950s. But it would not be fair or correct to award the title of "the first video game" to any one of these specific inventions.

In 1948, ten years before Higinbotham's Tennis for Two, Thomas T. Goldsmith Jr. and Estle R. Mann patented the "Cathode-Ray Tube Amusement Device," making this currently the earliest-documented video game predecessor. The amusement device, however, required players to overlay pictures or illustrations of targets such as airplanes in front of the screen, dovetailing the game's action. This was unlike Higinbotham's Tennis for Two, which entirely displayed the game's visuals on the screen.

Another video game-like device, the Nimrod computer, was built by Ferranti International and first displayed at the Festival of Britain's Exhibition of Science in 1951. Although the computer was built to play the century-old game of logic and strategy called "Nim," the electronic version of the game was specifically designed to demonstrate the processing power of the new computing device. This was in contrast with Tennis for Two, which was designed to be played for fun. In addition, the Nimrod computer did not use a cathode-ray tube display with elements that appeared to "move" on screen like Tennis for Two. Instead, it used a set of fixed lights that turned on and off and a legend to describe what was happening throughout the demonstration.

Then, in 1952, A.S. Douglas at the University of Cambridge created an electronic version of Tic-Tac-Toe, which he titled "OXO" (or Noughts and Crosses). This single-player "game" was designed for academic purposes — Douglas used the electronic OXO on the famous Electronic Delay Storage Automatic Calculator, or EDSAC, to study the "Interactions Between Human and Computer." Like electronic Nim, electronic OXO was not designed to be entertaining.

Some argue that Tennis for Two or any one of the earlier predecessors to the modern video

**"Higinbotham's circuits were rock solid. I found his work to be so beautiful, so simple. For someone involved in electronics, these really were something to behold." — David Potter**

ing ball reminded Higinbotham of a tennis game and the idea of Tennis for Two was born.

Higinbotham used four of the computer's operational amplifiers to generate the ball's motion while the computer's remaining six amplifiers sensed when the ball hit the ground or net and switched controls to the person in whose court the ball was located. In order to generate the court, net, and ball on screen, it was necessary to time-share these functions.

"The real innovation in this game is the use of those 'new-fangled' germanium transistors that were just becoming commercially available in the late 1950s," said Peter Takacs of Brookhaven Lab's Instrumentation Division, who is currently working to rebuild a playable Tennis for Two. "Higinbotham used the transistors to build a fast-switching circuit that would take the three outputs from the computer and display them alternately on the oscilloscope screen at a 'blazing' fast speed of 36 Hertz. At that display rate, the eye sees the ball, the net, and the court as one image, rather than as three separate images."

In 1958, when Tennis for Two was first introduced, the oscilloscope display was only five inches in diameter. In 1959, the game was improved. A larger

Laboratory and worked on cathode-ray tube displays for airborne, ship-borne, and land-based radars. This involved designing a way to display radio waves that echoed or bounced back off distant targets. Later, Higinbotham worked on the Eagle radar display system, which showed the radar returns of ground targets as seen from a high-flying B-28 airplane. The picture of the target area stood still on the display, in spite of the yaw, pitch, or roll of the aircraft while maneuvering toward the target. This work led to patents for circuits that used operational amplifiers like those in the analog computer used for the tennis game.

David Potter, who was greatly inspired by Higinbotham and worked with him at the time Tennis for Two was designed and built, commented on Higinbotham's designs, stating, "Higinbotham's circuits were rock solid. I found his work to be so beautiful, so simple. For someone involved in electronics, these really were something to behold."

All in all, when Higinbotham designed Tennis for Two, he incorporated much of what he had done before. As he recalled, it took about two hours to lay out the design and a couple of days to fill it in with components on hand. Brookhaven Lab technician Bob Dvorak put it together



A young William Higinbotham, creator of Tennis for Two.

game cannot be titled the first "video" game because not one of them displayed a "video" signal. The term "video" implies that electronic signals are converted to images on a screen using a raster pattern, a series of horizontal lines composed of individual pixels. Although older oscilloscopes, televisions, and computer screens all used cathode-ray tubes, oscilloscopes visually display changes in electrical voltage; they do not use the raster process. While Higinbotham's system did not create a video signal, he had created a unique way to alternate among the computer's outputs with the transistor switching circuit, creating the image of a tennis court and allowing players to control a movable ball seen on a screen, just like a modern video game.

### Wrapping Up the Game

In retrospect, Higinbotham agreed he should have applied for a patent. But if he had, the patent would have belonged to the federal government, and no riches would have come his way, anyway. According to Higinbotham, the reason he did not apply was that at the time, the game did not seem to be any more novel than the bouncing ball circuit in the instruction book.

Higinbotham, who died in 1994, wished to be known for his work on radar displays and his efforts to slow the nuclear arms race. Little did he know that Tennis for Two, the game he had created for Brookhaven Lab's open house in 1958 to entertain visitors and convey the relevance of scientific endeavors for society, would lead to Pong, Pac-Man, Mario, new video game systems and new video games, magazines, and Congressional debates. He might have guessed that it would lead to fun.

— Joe Gettler