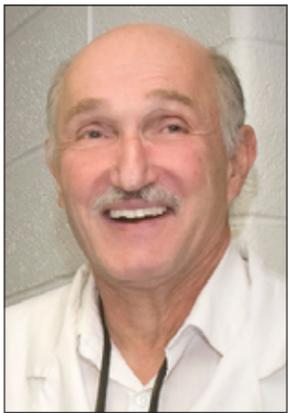


25th Anniversary of Rehak's and Gatti's Innovative Detector



Pavel Rehak



Emilio Gatti

In 1983, Pavel Rehak of BNL and Emilio Gatti of Polytechnic Institute of Milan published a paper on their invention of the silicon drift detector (SDD), followed later by a patent on the new concept.

How did two physicists, a continent apart, co-invent the same device?

Gatti, a distinguished professor, was a regular guest scientist in BNL's Instrumentation Division since 1973, and in the fall of 1982, he discussed his work on a fully depleted charge-coupled device (CCD). The concept of the detector Gatti described had been received with skepticism from silicon experts elsewhere, who did not believe it was technically feasible. However, the next day, Rehak described his own similar concept to Gatti — they worked together for four days to define the concepts of three new detectors, which they believed would be relatively easy to produce and potentially perform well.

Still faced with skepticism, Rehak and Gatti worked with Rolf Beuttenmuller, then an Instrumentation technical associate, to produce a test silicon structure. The test device was created in just two days, despite modest production technology. Even better, the device was functional, and the silicon drift detector was born.

Said Instrumentation Head, Veljko Radeka, "Since around 1980 the question was frequently asked if a semiconductor equivalent to a gas-drift chamber for particle tracking could be conceived. An almost universal answer by the experts in detector circles was a rather emphatic 'No' — one could not imagine drifting charges in a very thin sheet of silicon over any distance. A great conceptual breakthrough by Gatti and Rehak was to find a way to deplete free charges from a large sheet of very thin silicon by a potential at a point anode, and to create within the sheet an electric field appropriate for

preserving and drifting charges produced by ionization.

"The full benefit of this innovation was not anticipated at the time," continued Radeka. "While it was motivated by the needs for particle tracking, its impact has proven to be the greatest for present and future x-ray detectors."

In their original paper, the SDD and two other devices introduced the concept of lateral collection of electric charges with respect to its electrodes, a radical change from the usual longitudinal collection. These new devices therefore permitted charge collection from a large area onto a small-sized

anode, resulting in high spatial and ionization-charge accuracy over much larger areas than previously possible with a single detector.

Once the SDD was in production, it was first used at CERN, the European particle physics accelerator in Switzerland, in the CERES and WA98 experiments and then at BNL's Relativistic Heavy Ion Collider in the STAR experiment, which used nearly 300 SDDs. In the future, SDDs will be detecting charged particles in the ALICE experiment at CERN's Large Hadron Collider.

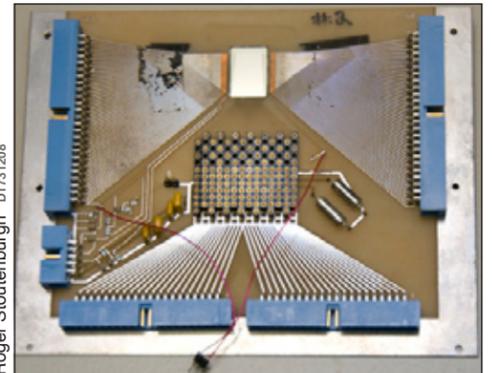
Advances, Applications

Continued development of the SDD has resulted in further advances in its performance, together with applications that range from mapping the surfaces of celestial bodies in space to detecting forged reproductions of artwork. For the detector itself, specialized electronics were needed to read out the signals from extremely low capacitance anodes. This led to Instrumentation scientist Gianluigi De Geronimo's development of custom-integrated circuitry, which connects to multiple anodes. Twenty years ago, without

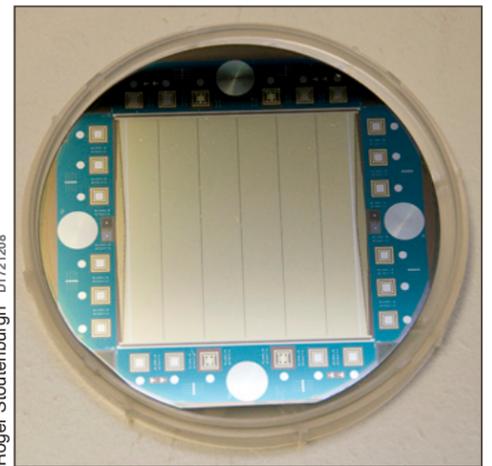
the integrated circuit, each anode required its own discrete read-out electronics, which would occupy an area similar to that of the SDD. Today, BNL can fabricate many SDDs on a single 10cm wafer, which are read out by a relatively tiny integrated circuit.

BNL's Instrumentation, in collaboration with the NASA Marshall Space Flight Center, also developed silicon drift detectors for x-ray spectroscopy, which use an array of hexagonal-shaped detectors. These SDDs are shielded from visible light by the use of a thin aluminum layer but are sensitive to soft x-rays. These x-ray detectors are the first in a generation of sensors that may be used on future space missions, in order to map surfaces of various solar bodies with x-ray fluorescence, including the moon (which reflects solar x-rays); Mercury; asteroids; Martian satellites; and Europa, Jupiter's moon.

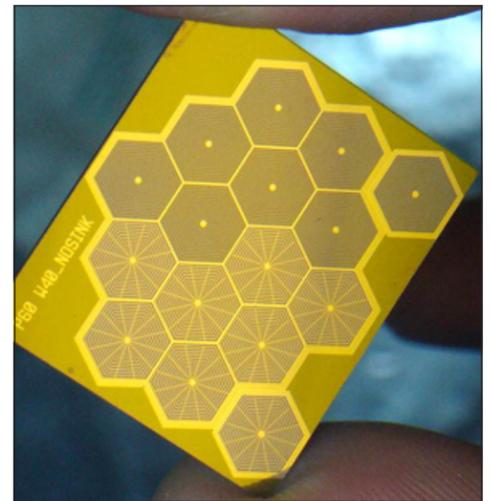
Similar very large arrays of SDDs are planned for use at BNL's National Synchrotron Light Source (NSLS) and future NSLS-II. These SDDs will cover much larger solid angles than previously achievable to detect fluorescence photons ex-



Roger Stoutenburg D1731208



Roger Stoutenburg D1731208



Silicon drift detectors, past to present, 25 years old (top), 10 years old (middle), current

Advantage

Of Silicon in Detectors:

Detectors provide information on the position of particles emerging from collisions in particle physics experiments and the ionization that the particles produce in silicon. Silicon, with a very good chemistry for making devices, allowed electrode patterns on the detectors to be built at the micron size — less than one-fiftieth the diameter of a human hair.

cited by the primary x-ray beam. See *Detector* on pg. 2

BNL Celebrates Trajectory of Spin Physics at Symposium for Gerry Bunce

To honor Gerry Bunce of the Physics Department after his retirement last September, the Physics Department celebrated his 32 years of physics research in a symposium given in the Large Seminar Room on November 19. The symposium was organized by a committee of his peers and collaborators chaired by Yousef Makdisi, Collider-Accelerator Department (C-AD).

The presentations covered the physics research in which Bunce was involved, starting from the most recent: spin at the Relativistic Heavy Ion Collider (RHIC), described in the first session, chaired by RIKEN BNL Research Center Director Nicholas Samios, with presentations by Robert Jaffe, Massachusetts Institute of Technology, who gave a historical perspective of present understanding of spin processes; and Jacques Soffer, Temple University, with a theoretical framework encompassing work at lower energy and RHIC.

In the second session, chaired by Derek Lowenstein, C-AD, Naohito Saito of KEK, Japan, described the RHIC experiments and the



Roger Stoutenburg D1591108

upcoming program at J-PARC, the Japan Proton Accelerator Research Complex. The next talk was given by Thomas Roser, C-AD, who related the early discussions, travails, and accelerator modifications that led to polarized beams at RHIC.

The backwards timeline continued in the afternoon session chaired by Thomas Ludlam, Physics, with experiments at BNL's Alternating Gradient Synchrotron. David Hertzog, University of Illinois at Urbana-Champaign, gave a rousing presentation on the Muon

g-2 to the tune of "Where Have All the Muons Gone?" and Steven Heppelmann of Penn State University spoke on "Color Transparency." Then came the early days at Fermilab recalled by Kenneth Heller, University of Minnesota, who described the discovery of lambda polarization at high energies.

Time moved further back with the session chaired by Michael Tannenbaum, Physics, in which Stephen Olsen, University of Hawaii, presented Bunce's thesis, a spin experiment at the Princ-

eton Pennsylvania Accelerator just before its shutdown. This talk was followed by a back-to-the future presentation from Steve Vigdor, BNL Associate Lab Director for Nuclear & Particle Physics, who looked ahead to the future of RHIC science. A lively half-hour of reminiscences from many attendees and the guest of honor concluded the symposium, which was followed by a reception in Physics and dinner at Berkner Hall.

Comments Vigdor, "Gerry Bunce nurtured the spin pro-

gram to its current status as a major thrust of RHIC science. We hope to further enhance his legacy in the coming years, not only by delivering on the promise of the RHIC spin program, but possibly also by following up the renowned muon anomalous magnetic moment experiment with new precision spin-physics experiments at BNL. Gerry's proactive commitment over many years has had a profound impact on the Laboratory."

— Liz Seubert

Detector from pg. 1

The third device described in the original paper is the fully depleted CCD with a large sensitive area that is several hundred microns thick. One excellent utilization of this idea was realized by collaborators at the Max Planck Institute in Munich. This effort culminated in 1999 when the XMM (x-ray Multi Mirror) space observatory was placed in orbit around the Earth. At the focal plane of the largest x-ray mirror were fully depleted CCDs produced in the Institute. This monolithic x-ray sensor had an area of 6x6 cm² and fast read-out. The in-orbit

commissioning of the detector was completed in March 2000, and since then, the detector has provided a wealth of data to the astrophysical community.

One of the most widespread uses of drift detectors is now as a high-resolution x-ray detector in commercial electron microscopes. This industrial application, used primarily to analyze trace elements in a sample by x-ray fluorescence, previously required liquid nitrogen-cooled sensors, but is now performed with greater efficiency and much more conveniently at room temperature with the SDD. — Satya Shanmugham

Melvyn Morris of OEP Honored By School-Business Partnerships of L.I., Inc.

School-Business Partnerships of Long Island, Inc. (SBPLI) honored Melvyn Morris, an administrator in BNL's Office of Educational Programs, at their "Sixty Over Sixty" inaugural awards gala for his contributions to education on Long Island. Along with 59 other honorees in various fields, he received a plaque at a dinner held on October 23 at the Crest Hollow Country Club in Woodbury, NY.

SBPLI is a nonprofit organization that specializes in creating partnerships between Long Island schools and businesses. Proceeds from the "Sixty Over Sixty" awards gala will benefit SBPLI-LI-FIRST's Robotics and Lego League competition programs.

"I'm honored to receive this award and proud to be in public education for my whole career," Morris said. "I'm glad that my contributions have helped students and fellow educators. It's fun to work with students and teachers who are enthusiastic about learning."

In 2006, Morris initiated the Open Space Stewardship Program at BNL, which takes students in grades K through 12 outdoors to perform environmental research on undeveloped land owned by a public or private agency.



Roger Stoutenburgh 04/27/08

ogy/education in 1962 from Stony Brook University (SBU), an M.S. in marine science from C.W. Post College in 1966, and both master's and doctorate degrees in science education from the University of Florida in 1966 and 1969, respectively.

From 1962 to 1966, Morris taught science at Mulligan Jr. High School in Central Islip. He joined the staff of William Floyd High School in Shirley in 1969, where he was science chair. In 1972, he became an education instructor at SBU. He then joined the Shoreham-Wading River Central School District in 1974 as one of the first science teachers hired in the new district, and he helped to establish the science education curriculum in the district. Morris joined BNL in 2002 as an educational programs administrator.

Morris was elected a Fellow of the American Association for the Advancement of Science in 1971. He held positions as adjunct instructor at SBU from 1998 to 2001; at Southampton College, 1998-1999; and at Suffolk Community College, 1975-1977. He was also cooperative education coordinator at Southampton College from 1998 to 2001.

— Diane Greenberg

The program helps students learn scientific protocol, data collection and data analysis. Students also develop a sense of civic responsibility as stewards of local lands. About 30 schools and 100 teachers in Suffolk County are currently enrolled in the program.

Morris also coordinates DOE's Science Undergraduate Laboratory Internship Program at BNL, the National Science Foundation's Pre-Service Teacher Program, and the DOE Academies Creating Teacher Scientists Program. In addition, he is in charge of running the annual BNL Model Bridge Building Contest for high school students.

Morris earned a B.S. in biol-



Roger Stoutenburgh 04/27/08

Instrumentation's 'Clean Room' Fabrication

The silicon detectors are fabricated in the clean room of the Instrumentation Division's silicon-detector processing facility, overseen by Zheng Li. By building an electrode structure on both sides of a silicon wafer, a uniform electric field is established with a collecting anode at the center or edge of the detector area.

When a charged particle traverses the wafer, or an x-ray photon is absorbed, the electric field transports the electric charges produced by ionization to the collecting anode at a constant velocity. The time taken for the charge to drift to the center from the instant of impact determines the particle's position when it hit the wafer, or in the case of the x-ray the charge is a measure of the photon energy. — Satya Shanmugham

Coming Up...

444th Brookhaven Lecture
Tuesday, 12/16
See Calendar, pg. 3

In Memoriam

Robert Ince, who retired from the Chemistry Department on June 30, 1973, as a technical associate III, died at 96 on October 24, 2008. His longest time at BNL was as a technician B in the Nuclear Energy Department, September 19, 1955, until his retirement. He first joined BNL as a carpenter on June 16, 1947, left in November 1947, and returned on April 4, 1949, to work as a pile operator C in the Reactor Division until October 1950.

George Waldbauer, who became a Supply & Materiel Division warehouseman on October 30, 1961, and retired as a stores clerk on May 7, 1982, died at age 90 on November 26, 2008.

Reminder: Reimbursement Account Deadlines

Contributions to health care or dependent day care reimbursement accounts that have not been used by the end of the calendar year must be forfeited, in accordance with Internal Revenue Service regulations.

So, be sure to use up balances within all 2008 reimbursement accounts by the end of the calendar year. Remember that many over-the-counter medicines qualify for reimbursement under the health care account. Employees can submit claims for any qualifying expenses incurred in 2008 until March 31, 2009.

Arrivals & Departures

— Arrivals —

Jonathan Allen.....CFN
William Eisele.....CAD
Yuchen MiaoBiology
Ryan Tappero.....NSLS

— Departures —

None

Camera Club Meeting, 12/16

The Brookhaven Camera Club will meet on Tuesday, December 16, in Berkner Hall Room B, noon-1 p.m., to review photographs and discuss future assignments. Members should submit their photographs for review — a close-up, an object framed by another object, and a "free selection" — as 5" x 7" jpegs (300 dpi) to Joe Gettler, jgettler@bnl.gov, by today, 12/12. For more information about the club, call Ripp Bowman, Ext. 4672.

Lots of Very Cool Gifts! Science-Based Gift Shop Open Today, Noon – 2 p.m.

Fun toys and unique gifts, all science-based, are available for purchase at the Science Learning Center, Bldg. 935 (formerly known as the Science Museum), today, Dec. 12 and next Friday, Dec. 19, noon – 2 p.m. Don't drop, shop!

Service Anniversaries

The following employees celebrated a service anniversary during September 2008.

— Thirty-Five Years —

Derek Lowenstein.....NPP Dir.
Joseph IndusiEENS
Samuel Krinsky.....NSLS-II

— Thirty Years —

Donald Barton C-AD
Thomas LudlamNPP Dir.
Richard Fernow Physics
Daniel McCafferty..... C-AD
Barbara Langhorne PPM
Paul RibaudMagnet
Thomas Dilgen.....Magnet
Joseph Funaro..... C-AD
James DavenportDir.'s Office
Michael Delph..... Lab. Protec

— Twenty-Five Years —

Mariette Faulkner Physics
Christopher WeilandicsS&HS
Gordon Corbin.....Magnet
Joseph DeVoe..... Maint. & Fabric.

— Twenty Years —

Yimei Zhu.....CMPMS
Thomas TsangInstrum.
Ilan Ben-Zvi..... C-AD
Christopher Zarcone C-AD
Louis Snydstrup C-AD
Edward SteinCMPMS
Cheryl Ann Eleazer PPM
Lap-Yan Cheng..... ES&T
Frank Zafonte Rad. Control
Harry Hacker..... C-AD
Emil Zitvogel NSLS
Hung Sui LeeChemistry

— Ten Years —

John MillerChemistry
Yangang Liu Env. Scis.
Andrew Cook.....Chemistry
Andrei Sukhanov Physics
Mary Turner..... Staff Services
James Jamilkowski C-AD
Sheikh Farooq C-AD
John Hale..... Staff Services

Employees: Renew Your ID Badges That Will Expire 12/31/08

New badges have been issued to about 90 percent of BNL employees, but the rest have not yet renewed their badges. BNL employees whose ID badges expire on 12/31/08 must go to the Badging Office in Building 400 to get a new badge. Failure to obtain your new badge will result in confiscation of the expired one. The hours of the Badging Office are Monday to Thursday 8:30 – 4 p.m., and Friday 8:30 – 1 p.m. If you have any questions, call Ext. 2596, 5690, or 5149.



Brookhaven Retired Employees Association members at the annual BREA get-together lunch held in early summer.

Retirees — Join BREA!

Members of the Brookhaven Retired Employees Association (BREA) will soon be receiving membership renewal forms for next year in the forthcoming BREA newsletter, and we request that annual members complete and return these forms as soon as possible. BREA has several objectives — to further retiree interests and benefits, to keep members informed about retiree issues, to encourage activities for social interaction, and to publish a newsletter. We extend a cordial invitation to all current non-member retirees to join our ranks at this time.



Photographed at the annual BREA lunch last June

For more information, contact the BREA website at www.brea.bnl.gov or our secretary, Dave Cox, at (631) 286-9725 or expatdave@aol.com, or the BREA office (631) 344-2873.

Please Donate to the BNL Food Drive

Bins are in the Research Support Building, Bldg. 400; and near the U.S. Post Office, Bldg. 179.

Roger Stoutenburgh 04/27/08

Roger Stoutenburgh 04/27/08

Holiday Auction, Used Books, And Yard Sale Net \$16,419 For BNL's United Way Fund

The wild success of the Holiday Auction, Used Book Sale and Yard Sale held by BNL on Thursday and Friday, December 4 and 5, resulted in a record grand total of \$16,419 for the United Way.

To achieve this, Berkner Hall lobby had bloomed with beautifully packaged basketfuls of desirable items donated by Lab departments and divisions; flanked by dozens of coupons and gift certificates from local stores and restaurants just asking to be won. Book lovers seized great bargains, yard-sale addicts found fabulous stuff.

Carol Rooney of the Environmental Protection Division, with Kathy Gurski of Community, Education, Government & Public Affairs, and Linda Sinatra of the Fiscal Services Division, aided by many willing volunteers organized the auction, which brought in \$15,034.

Kathy Lancaster of the Research Library marshalled the books, which made \$540.

And Chris Johnson of the Facility Operations Office masterminded the yard sale, which took in \$845.



Roger Stoutenburgh 01211208

The total was greatly increased by the generosity of Gary Olsen of the Facility Operations Office, who won the 50/50 drawing but gave all his winnings of over \$800 back to the United Way.

Said Rooney, "Kathy and I want to thank everyone for all their help, especially Linda Sinatra. It was a lot of work, but we enjoyed it. The Lab community was extremely generous in donating the baskets and obtaining coupons and gift certi-

icates to attract more bids. The yard sale and book sale both drew in more potential 'customers,' and together, we made a wonderful contribution."

Upcoming Events

- **Today! International Food Tasting!** Noon-1:30 p.m. Recreation Hall. Contact Jennifer Lynch, jlynch@bnl.gov, Ext. 4894. Recommended donation: minimum of \$10.

- **Today! Dunk Tank Event!** 11 a.m.-2 p.m. Firehouse, Bldg. 499. \$5 for three balls. If one ball you throw hits the target, a volunteer supervisor will be dunked in the tank. All in a good cause.

- **Next Week: Gift Wrapping.** See more info on this page.

In addition, employee volunteer hours are matched by a contribution to the United Way campaign from Brookhaven Science Associates.

For more information, call the Volunteer Days Program Coordinator, Mary Campbell, Ext. 3927, or maryc@bnl.gov.

— Liz Seubert

Gift Wrapping In Support of The United Way, 12/16, 17, 18

Save time and support the United Way this holiday season. Have your gifts wrapped in the lobby of Berkner Hall (Bldg. 488) on December 16 – 18 between 11 a.m. and 2 p.m. Shirt-box-sized gifts can be wrapped for two dollars and larger boxes for three dollars or more. Additional boxes will also be available on a first-come, first-served basis. All proceeds will go to the United Way. If you can volunteer to wrap gifts or donate supplies including wrapping paper, ribbon, and boxes, contact Joanne Rula, jrula@bnl.gov, Ext. 8481.

Defensive Driving: Two Parts, 12/15 & 18

The next six-hour Defensive Driving (Point & Insurance Reduction) course will be held in two parts, on Monday and Thursday, December 15 and 18, in the Brookhaven Center South Room, from 6 p.m. to 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.

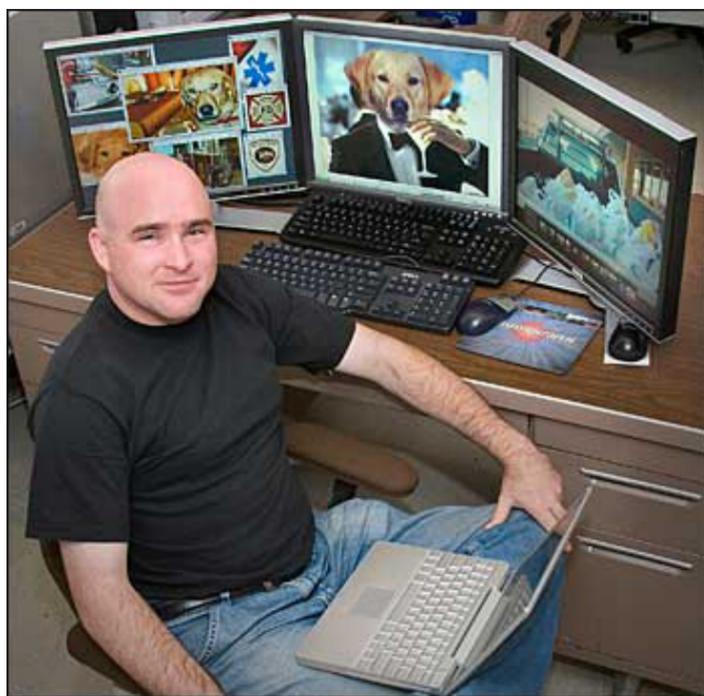
The nameplate next to his office door reads "John Galvin — all-around nice guy" with a picture of Ajax, his yellow lab, in the upper left corner.

This is the best way to describe Galvin, who works in BNL's Web Services Group as an applications engineer. Galvin works with supervisor Gary Schroeder and co-workers Chris Weaver and Pam Mansfield to create and maintain web-based applications for the BNL community.

For example, Galvin designed the content-management system that automatically populates most of the content on the Lab's internal and external home pages each day, the same system that dynamically builds all the "@brookhavenTODAY" story pages.

According to Galvin, 95 percent of what viewers see when they open the Lab's homepage is dynamically generated. "Dynamically generated" simply means that the web page is really just a template, and the actual page content is stored separately and is retrieved from a database for placement into the template web page when someone loads the page in their web browser.

"Writers in the Lab's Media & Communications Office generate much of the top-level web content (including this story) and then forward the text and associated images to Web Services, where we use our own custom-built systems to store the content in databases," Galvin explains. "We strive to design visually appealing web pages and have designed and built many of the Lab's content management systems that control when, where, and how to display information on the web so that the information may be accessed and communicated most effectively."



Roger Stoutenburgh 01211208

Meet John Galvin

Galvin, who first joined Brookhaven in 2000 as a public affairs representative in the Media & Communications Office, points out that, like many who work in web development, he has little formal training in the subject. With unrelated undergraduate and graduate degrees in biology and government & public policy, respectively, Galvin describes his professional development as a self-motivated, learn-as-you-go process. The shelves in his office are lined with computer programming books that he uses to teach himself about the field as needed.

"Until two years ago, I only knew English and a little Spanish," Galvin said, jokingly. "If you need to learn something, a new programming language, for example, you figure it out on your own."

As a volunteer firefighter, Galvin has certainly learned

how to solve new problems while working under pressure. He has delivered a baby, fought Long Island's 1995 wildfires, responded to countless car accidents, and has treated and transported many sick and injured people during his 15-year tenure in the Wading River Fire Department.

"It is a great feeling to be able to help people in their time of need," he said, citing this "altruistic benefit" as reason enough to undertake the risks and dedicate his time to serve in this volunteer capacity.

Additionally, Galvin notes a sense of community with his fellow firefighters.

"I consider my fellow volunteers my extended family," Galvin said. "As a result of our collective abilities, members of the fire service are able to accomplish great things when working together to overcome

the most adverse conditions and abject situations."

Galvin's participation in the fire service isn't limited to emergency response. As the event organizer, Galvin has taken the lead in running the Wading River Fire Department's annual "Stuff-a-Bus" non-perishable food drives — a charitable endeavor Galvin was inspired to start in Wading River after learning about a similar food drive conducted each year by Connecticut-based radio station KC101.

In December 2006, Galvin was elected to a five-year term as one of Wading River's five publicly elected fire commissioners.

"In New York State, each fire district's board of fire commissioners serves in a similar administrative and oversight capacity [for the fire district] as a school board does for a school district," Galvin said. "We are the stewards of the tax-payers investment in the fire district's emergency response resources."

Just as he has done at BNL, Galvin is working to maximize the effectiveness of his fire district's operations while ensuring that those operations are conducted as efficiently and cost-effectively as possible. Galvin's priorities include the modernization of many of the district's policies and updating the district's computer infrastructure and applications with the goal of increased data accuracy and decreased paper consumption.

While Galvin's roles at BNL and at the Wading River Fire Department have changed throughout the years, one thing is for sure: he will continue to work behind the scenes to help keep our communities — at work and at home — running smoothly.

— Kirsten Dorans

CALENDAR

— THIS WEEKEND —

Today, Friday, 12/12

***Dunk Tank Event for United Way**
11 a.m.-2 p.m. Firehouse, Bldg. 499. \$5 for three balls — if a ball hits the target, a volunteer supervisor will be dunked in the tank. All welcome.

***International Food Tasting**
Noon-1:30 p.m. Rec. Hall. United Way fundraiser. Jennifer Lynch, Ext. 4894. Recommended donation: \$10 minimum.

***Michael Jazz Trio in Concert**
7 p.m. Brookhaven Center, South Room. Three talented young brothers: 14, 12, and 8, who have auditioned successfully to perform in the future at the Apollo Theater, light up the keyboard, sax, and drums. Also, Helio Takai, Physics Department, will give a unique demo on "Frequency Physics." All are welcome; the event is open to the public. Visitors to the Lab age 16 and over must bring photo ID. Tickets at \$10 at the BERA Store until 3 p.m. or at the door. See story, pg. 4.

***Holiday Dance, Live Milagro Band**
7 p.m.-midnight. Brookhaven Center, North Ballroom. Featuring Milagro Band. Start with a shrimp cocktail and hero buffet dinner at 7 p.m. At 7:45 p.m., dance instructor Annette Alicante will give a one-hour dance lesson in rumba. From 9 p.m., the popular seven-piece Santana tribute band, Milagro, will set everyone's toes and dance shoes tapping. All are welcome; the event is open to the public. Visitors to the Lab age 16 and over must bring a photo ID. Tickets cost \$30, buy at the BERA Store until 3 p.m., or at the door.

— WEEK OF 12/15 —

Monday, 12/15

Book and Gift Fair
10 a.m.-2 p.m. Berkner Hall lobby. Resolve holiday shopping right here at this BERA-sponsored new book and gift sale. Discount prices.

***Defensive Driving, Part I**
6-9:15 p.m. Brookhaven Center. See notice, above, left.

Tuesday, 12/16

***Gift Wrapping, United Way Benefit**
11 a.m.-2 p.m. Berkner Hall lobby. Also on 12/17 and 18. See notice above, left.

Book and Gift Fair
10 a.m.-2 p.m. See 12/15, above.

444th Brookhaven Lecture
4 p.m. Berkner Hall. NOTE UNUSUAL DAY. Anatoli Zelenski, Collider-Accelerator Department, will talk on "How It's Made — Polarized Proton Beam." Refreshments before and after the talk. All are welcome to this free lecture. Visitors to the Lab of 16 and over must carry a photo ID. To dine with the speaker at a restaurant off site afterward, contact Sandy Asselta, sandylee@bnl.gov, Ext. 4550.

Wednesday, 12/16

***Gift Wrapping, United Way Benefit**
11 a.m.-2 p.m. Berkner Hall lobby. See notice above, left.

Thursday, 12/18

Defensive Driving, Part II
See 12/15 above & notice, pg. 2.

— WEEK OF 12/22 —

Monday, 12/22

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.

Wed., 12/24 (half day)

***Dial 2350 for Santa**
See notice, pg. 4. Lab closed from 12:30 p.m.

Thursday, 12/25

BNL Closed for Christmas Day

Classified Advertisements

Placement Notices

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

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

OPEN RECRUITMENT – Opportunities for Lab employees and outside candidates.

POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in physics, electrical engineering, materials science or related field. Experience with nanofabrication is essential. Experience with nanoimprint techniques is desirable. A strong commitment to collaborative research and excellent communication and interpersonal skills are important. The Center for Functional Nanomaterials initiated an interdisciplinary research program to investigate nanostructured organic materials for photovoltaic conversion devices. This position will focus on high-resolution patterning of organic semiconductor materials by nanoimprint lithography methods. Prototype device fabrication and electrical testing are important aspects of the project. The research involves very hands-on experimental work. The research will be conducted primarily in the Nanofabrication Facility located in the Center for Functional Nanomaterials and at the National Synchrotron Light Source at Brookhaven National Laboratory. Under the direction of A. Stein and C. Black, Center for Functional Nanomaterials. Apply to Job ID #14693.

LICENSING ASSOCIATE (A-9) - Requires an MBA with strong scientific background, preferably an advanced degree, ten years' related experience, and familiarity with licensing, intellectual property, and contracts. Excellent analytical, market research, negotiating, and communication skills are also required. Will be responsible for continuous interaction with research staff to identify research capabilities and interests and new inventions; conducting market evaluations of invention disclosures; developing business analyses for potential technology commercialization projects with industry; identifying potential licensees for intellectual properties; and negotiating the intellectual property license agreements covering technologies. Demonstrated ability to communicate complex issues quickly, clearly, and succinctly is necessary. Experience with Microsoft Office applications and computer search experience with database systems needed. Strong priority setting skills required. Must be able to work in a team environment. Position requires U.S. citizenship. Office of Intellectual Property & Sponsored Research. Apply to Job ID # 14694.

SR. BUDGET SPECIALIST (A-8) - Requires a bachelor's degree in accounting, business administration, or equivalent plus a minimum of 10 years' relevant experience. Excellent oral and written communication skills as well as organizational and analytical skills are essential. Proficiency in Excel and other MS Office products highly desirable. Experience with PeopleSoft financial applications a plus. Selected candidate will provide direct oversight for the Department's primary operating program and advise senior management regarding strategic financial decisions. Responsibilities will include estimating, budget formulation, rate development, analysis of cost, and commitment and preparation of financial reports for management. Collider-Accelerator Department. ERAP eligible - \$1,000. Apply to Job ID #14691.

ELECTRICAL RESEARCH ENGINEER II (P-7) - Requires a bachelor's degree in electrical/electronic engineering with a minimum of seven years of engineering experience in analog circuit design and layout, amplifiers, construction techniques, PLC controls, and digital signal processing. Experience with particle accelerator systems, beam instrumentation, RF systems, and high voltage power supplies is a definite plus. The selected candidate will assist in design, component selection, specification, construction, testing, and commissioning of components and systems for a proton LINAC and heavy ion beam source. This will include system design and modeling, evaluation of prototypes, construction and installation of equipment, acceptance tests, commissioning and operations, upgrades, and system improvements. The candidate will also assist in the direction of technicians during

all phases of construction, commissioning, and equipment operation. Excellent written and verbal communication and good interpersonal skills are required to interact with a diverse group of engineers, scientists, and technical staff. Will report to the C-AD LINAC/EBIS Systems Group Leader/Collider-Accelerator Department. ERAP eligible - \$1,000. Apply to Job ID #14692.

ENERGY MANAGEMENT PROJECT ENGINEER II (P-7, reposting) - Requires a bachelor's degree in an engineering discipline, or equivalent and a minimum of seven years of progressively responsible related work experience required, with at least five years of professional experience with energy management controls or energy systems. Candidate must possess a sound knowledge of current principles and practices in a specialized field of engineering and energy management. Knowledge in any or all of the following areas will be considered heavily; HVAC systems and controls, energy conservation technologies, metering systems, steam systems, project management, engineering economics and cost estimating. Effective presentation and communications skills are required. An Engineering in Training (EIT) certificate or a professional engineering license, and familiarity with Automated Logic Controls (ALC) and Software, Microsoft Office, Microsoft Access and Sequel Server are desirable. The Project Engineer II will develop energy conservation opportunities, coordinate implementation of these projects, monitor utility services and energy usage, manage and report energy usage data, assist with coordination and scheduling of electric loads both internally and with the supplying utilities, assist with managing an extensive internal metering and billing system, and implement demand-side management programs. Energy & Utilities Division. Apply to Job ID #14310.

Motor Vehicles

04 SUZUKI GSXR 750 - black/yellow w/lots of extras, great cond. 9000 mi. \$5,700. John, 516-852-2497.

03 HONDA SHADOW SPIRIT 750 - new National Cycle TwoUp windshield, Cobra mid-hgt chrome sissy bar, saddle bags. 6600 mi. \$3,000. Tom, Ext. 7578 or 793-4568.

99 SUBARU LEGACY OUTBACK - runs well, gd. cond., except needs new gas tank, 5spd awd, a/c, p/w, p/l, cd/cass, heated seats. \$2,500/neg. 874-3652.

98 ACURA INTEGRA - 2dr hbk 5spd, a/c, c/c, p/b, p/s, p/l, p/w, abs, am/fm/cd dk green, 26-34 mpg. 150K mi. \$3,400. Jim, Ext. 2432 or 821-9178.

98 MERCURY MOUNTAINEER - excel. cond., V8 awd, dk green/tan leather, all options except navigation. 68K mi. \$5,000. 516-477-9119.

95 ACURA INTEGRA - red, 2dr, a/c, a/t, cd, remote start, all pwr, drives strongly, more than 30mpg hwy. \$2,700/neg. Abdul, Ext. 2002 or 302-543-3631.

Marine Supplies

JOHNSON OUTBOARD MOTOR - 1986, fresh water use only, only 10 hrs of use; w/tank and hose, \$550. 602-316-4190.

Furnishings & Appliances

APPLIANCES - w/d, d/w, elec. range, almost new, cheap, make offer. Frank, Ext. 3433 or 466-1924.

CHEST - 5-drawer, \$20; 4 wood dinette chairs, \$5 ea; dorm refrig, 4 c.f., \$15; Xmas tree stand, \$5. Ext. 7505.

DINETTE SET - light-color wood table, 2.5'x4', wood padded-seat chairs. v/gd. cond., \$100. Ext. 5080 or 766-7701.

Audio, Video & Computers

E-MACHINE COMPUTER - 2, 1/w printer. \$100/per set. Ext. 5753 or 252-3356.

HD-DVD - Apollo 13- Tom Hanks \$6. Wayne, Ext. 2284.

SURVEILLANCE CAMERA - sm., can be used in/out drs., connects directly to a TV, over 50' wiring, \$50. Ext. 5769.

Sports, Hobbies & Pets

FOOSBALL TABLE - gd. cond., \$20, u-pic-up. Lloyd, Ext. 5225.

HOBBYCRAFTER VISE - B&D 8" Bench top work center w/table, \$15; Crochet kit, \$5; Nok Hockey Champion Board, wood, \$5. 949-7412.

ICE SKATES - 2 pair, size 6, Bauer EliteLittle, used, excel. cond., \$15/ea. Lloyd, Ext. 5225.

SKI MACHINE - Nordic Track Pro, v/gd. cond., pic. avail., \$55. Ext. 7505.

Tools, House & Garden

SANDER BENCH COMBO 1 - 6"Disk Sears, excel. cond., \$70. Joe, Ext. 3783 or 487-1479.

SANDER COMBO - disk bench mount, grt cond., \$70. Joe, Ext. 3783 or 487-1479.

SQUIRREL BAFFLE, POST MOUNT - prevent squirrel from climbing up 4x4 post, 22"d, dk green, weather-resistant finish. Steve, Ext. 7570.

WOOD PELLETS - premium, hardwood pellet fuel, By the ton-50 40lb. bags/pallet, Call now for pricing or other info. Chris, 741-9169.

Miscellaneous

2 NY PHILHARMONIC TICKETS - Friday, Dec. 5th, 8 PM, Lincoln Center, NYC, Maazel Conducts Beethoven's 5th Symphony, \$48/ea. Ext. 3381 or 744-4061.

CAR SEAT/CARRIER - Graco infant stay-in-car-base, like new, used twice, \$40. 513-8504.

CHRISTMAS TREE - 7 ft. Douglas Fir, 800 pre-strung lights, new in box, \$50. Joann, Ext. 7459 or 929-1981.

FIREWOOD - stove/firewood 6-15"L, \$250/cord delivered. Michael, Ext. 5262 or 284-2277.

PUNCH BOWL SET - Gibson 27 pc grape design, still in box \$10; firewood .5 cord, u-pic-up, \$75. Ext. 7159 or 219-1726.

REGULAR XBOX - (not 360) for sale. Includes 2 controllers, required wiring and 12 Xbox games. \$100. Ext. 5769.

ROLLING DUFFEL BAG - lg, used once, like new - \$20. Dennis, Ext. 4028 or 375-8519.

WOODEN LADDER AND SKIS - 6' OSHA certified \$20; Elan 175 cm skis, GEZE bindings, poles, Sz 7 Women Boots \$30. both v/gd. cond. 645-6131.

YOUTHFUL ESSENCE - Microdermabrasion sys.,\$30; Graco products, pack-n-play, \$20; snugli infant carseat, \$35/swing, \$30, gd-excel. cond. Karen, Ext. 7151.

Happenings

MINISTRY FUNDRAISER - Crowning Glory Ministry Inc. will sell homemade cakes & pies for the holidays. Why not save time and purchase one? Tiffany, 445-4027.

NEW YEAR'S EVE PARTY - Party at the Polish American Independent Club in Port-Jeff on 12/31 7-1230 DJ dinner open bar \$50pp. Mark, Ext. 2574 or 928-5684.

NEW YEAR SPLENDOR - Chinese new year splendor in Radio City,1/24&1/25, www.nysplendor.com - brilliant, inspiring, glorious. George, Ext. 4033.

Wanted

VOLUNTEERS AND HOLIDAY WRAPPING PAPER - Looking for volunteers to wrap gifts at United Way annual gift-wrapping sessions. Berkner, 12/16, 17, 18, 11 a.m.-2 p.m. Also, we need donated wrapping paper. Christine, Ext. 5090.

Free

CHRISTMAS TREE - artificial, 5-6' mcc-matt@bnl.gov. Matt, Ext. 7388.

For Rent

CENTER MORICHES - Grnd fir apt, 2 bdrms, l/r, eik, full bath, pvt ent, patio, use of yd, heat/water/elec incl, no smkg/pets, avail early Jan., single prof. preferred. \$1,300/mo. Jerry, 909-1801.

CENTER MORICHES - 3 bdrm, 1.5 bath house, eik, d/r, l/r, den, gar, bsmt, beach & boating rights. 1 mo sec. \$1,900/mo. 846-4331.

MEDFORD - 2 bdrm, grnd level apt., quiet st., eik w/new appl., 20x25 l/r, f/p, lg bath/closets, heat/wtr/cable incl., sep elec., pvt ent., use of yd \$1,400/mo. 730-8866.

NAPLES, FL - 2br/2ba furn. condo in gated golf comm., Jan-Mar., seasonal rate, non-seas. rental avail. at substn. lower monthly rate. \$3,250/mo. 523-7870.

MANHATTAN, NY - Upper East Side, cozy studio apt, sep. kit., incl. heat. \$1,250/mo. 331-3785.

SOUTH SETAUKET - lg. 5 bdrm house, 3 Vill. SD, 2.5 bath, 5 min to SUNY, 25 min to BNL poss. mother/dtr, quiet neighborh, nr. shops, \$2,400/mo./neg. + util. 983-4135.

YAPHANK - 2 upstairs bdrm. apt., priv. ent., no smkg/pets, avail. 12/15, incl. all util. except phone. \$1,300/mo. 775-8353/516-695-2369.

For Sale

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.

ROCKY POINT - 3bdrm, 1.5 bath, garage & workshop. .59 acre park like setting. Move in cond. Listed with Albo realty 744-4500 \$337,500 Rolf, Ext. 2305.

SHOREHAM - 4 bdrm, 2.5 bath Col., fml l/r and d/r, den w/fp, fin. bsmt, 12x20 deck., igs, granite counters, SWRS, much more, 7 mi to lab. \$499,900 Don, Ext. 2530 or 821-3320.

SOUND BEACH - waterview, 2 story salt-box, 3 bdrm, 1.5 bath, great rm, d/r, den, kit, gar., great views, sell/rent, \$1,800/mo. \$445,000 Dorothy, 793-9227.

SOUND BEACH - waterview, 2 bdrm, l/r, stone f/p, eik, lg. enough lot to expand, comm. beach, sell or rent \$1,150/mo. \$240,000 Dorothy, 793-9227.

On-Site Services

ENTERPRISE CAR RENTAL - 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.

BROOKHAVEN CENTER

THE MICHAEL JAZZ TRIO

FRIDAY, 12/12



Share The Michael Jazz Trio's Passion for Music, Tonight!

The Michael Jazz Trio — all three boys have the middle name of Michael — will perform at 7 p.m. this evening, Friday, December 12, 7 p.m., at the Brookhaven Center. Their newly released CD will be available for purchase at the concert.

The oldest of the three Michaels is 14-year-old Matthew, who started playing drums in school. "My real interest was piano, though," he said. "My grandparents started to teach me how to play piano and I just loved it." David, 12, is comfortable with the sax around his neck. He remembered, "One day, Matthew and I were practicing and our 8-year-old brother Jordan sat down behind the drums and started playing. We were all amazed at Jordan's natural ability to follow along."

The boys began playing in front of local stores, and then they were asked to perform at a fundraiser for the New York City Department of Corrections for an audience of almost 3,000 people. During the summer they performed over 50 times, including at a fundraiser for the Long Island Breast Cancer Cabaret. Recently, they successfully auditioned for a future performance at the Apollo Theater in Harlem, NY. Tickets cost \$10 and may be bought at the BERA Store until 3 p.m., or at the door.

CAFETERIA: HOLIDAY DINNER, HEROS, PIES CATERED - Nayyarsons Food Service will prepare you a delicious, trouble-free dinner: just heat and serve! Slow roasted maple glazed Virginia ham or Roast turkey sliced off the bone, mashed Yukon Gold potatoes with homestyle gravy, honey-glazed carrots, string beans amandine, choice of two fresh-baked holiday pies: \$150 plus tax. Feeds 12 to 15 people. Virginia Ham or Turkey alone: \$85 plus tax. Order by 12/19 for 12/24 or 12/31 pickup before noon. Ask about our 3-foot hero, shrimp cocktail, or canapé packages, available for New Year's Eve pickup. Contact Bob or Ray, Ext. 3541.



Michael Herbert CI-1-100

BERA Notes

For a complete list of BERA trips and events, visit the BERA website: <http://www.bnl.gov/bera>.

- Toy Drive:** Toys are needed for children who lack holiday gifts. Please drop new toys, not wrapped, at the BERA store, or at the Recreation office in Bldg. 400.
- Long Island Entertainment Books:** These have arrived and are available for \$20.
- Bermuda Cruise:** Tickets are still available for this five-night trip on the Royal Caribbean Cruise Mega Ship. Depart from Cape Liberty Cruise Port in New Jersey on May 23, 2009 and return on May 28.

Dial 2350 for Santa

For the 26th consecutive year, Santa Claus (who doubles as a BNL Firefighter when he is not out on his sleigh delivering presents) and his "Elf" will be coming to Upton town — to wish everyone happy holidays and to distribute candy canes and good cheer.

On Wednesday, December 24, Santa and his elf will make their rounds of BNL's offices, labs, and shops from 9 a.m. to noon. To have Santa and his merry crew visit your workplace at a specified time, call the North Pole, Ext. 2350.

OnTheWeb, the Bulletin is located at www.bnl.gov/bnlweb/pubaf/bulletin.html. A calendar listing scientific and technical seminars and lectures is found at www.bnl.gov/bnlweb/pubaf/calendar.html.

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