

## Closing In on the Border Between Primordial Plasma And Ordinary Matter

### Energy scan at RHIC reveals first hints of phase boundary

Scientists taking advantage of the versatility and new capabilities of the Relativistic Heavy Ion Collider (RHIC), an atom smasher at Brookhaven Lab, have observed first glimpses of a possible boundary separating ordinary nuclear matter, composed of protons and neutrons, from the seething soup of their constituent quarks and gluons that permeated the early universe some 14 billion years ago. Though RHIC physicists have been creating and studying this primordial quark-gluon plasma (QGP) for some time, the latest preliminary data presented at the Quark Matter 2012 international conference — held August 12–18 in Washington, D.C. — come from systematic studies varying the energy and types of colliding ions to create this new form of matter under a broad range of initial conditions, allowing the experimenters to unravel its intriguing properties.

“2012 has been a banner year for RHIC, with record-breaking collision rates, first collisions of uranium ions, and first asymmetric collisions of gold ions with copper ions,” said Sam Aronson, BNL Director. “These unique capabilities demonstrate the flexibility and outstanding performance of this machine as we seek to explore the subtle interplay of particles and forces that transformed the QGP of the early universe into the matter that makes up our world today.”

#### Two Phases of Matter

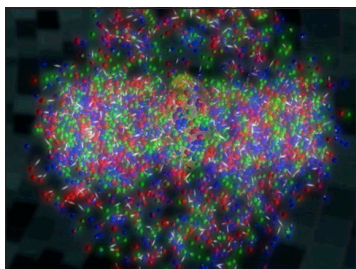
The nuclei of today’s ordinary atoms and QGP represent two different phases of matter whose constituents interact through the strongest of Nature’s forces. These interactions are described by a theory known as quantum chromodynamics, or QCD, so scientists sometimes refer to the exploration of QGP and this transition as the study of QCD matter.

#### RHIC Provides First Clues

As in other forms of matter, the different phases exist under different conditions of temperature and density, which can be mapped out on a “phase diagram,” where the regions are separated by a phase boundary akin to those that separate liquid water from ice and from steam. But in the case of nuclear matter, scientists still are not sure where to draw those boundary lines. RHIC is providing the first clues.

“RHIC is well positioned to explore QCD phase structure because we can vary the collision energy over a wide range, and in so doing, change the temperature and net quark density with which QCD matter is formed,” said Steven Vigdor, BNL’s Associate Laboratory Director for Nuclear & Particle Physics, who leads the RHIC research program.

For example, physicists from RHIC’s STAR and PHENIX



Quark-gluon plasma

collaborations have analyzed results from gold ion collisions taking place at energies of 200 billion electron volts (GeV) per pair of colliding particles, all the way down to 7.7 GeV.

While at the highest energies evidence for QGP formation is widely accepted, “many of the signatures of the QGP developed at 200 GeV disappear as the energy decreases,” said STAR spokesperson Nu Xu, a physicist at Lawrence Berkeley National Laboratory.

#### STAR & PHENIX Findings

In particular, the STAR findings analyzed so far indicate that interactions among “free” quarks and gluons — those characteristic of the “perfect” liquid QGP discovered at RHIC — appear to dominate at energies above 39 GeV, while at energies below 11.5 GeV, the interactions of bound states of quarks and gluons known as hadrons (such as the protons and neutrons of ordinary matter) appear to be the dominant feature observed.

“As you get below 39 GeV, several key observables begin to change,” Xu said.

The PHENIX experiment has observed similar behavior. They have found that quarks passing through the matter produced at collision energies from 39 GeV upward lose energy rapidly, as anticipated for interactions within QGP. Previous PHENIX results from copper-copper collisions at 22 GeV, in contrast, are consistent with no significant energy loss.

These measurements are helping scientists plot definitive points, or signposts, which tell them they may be approaching the boundary between ordinary nuclear matter and the QGP that dominated the early universe. But they haven’t yet proven that a sharp boundary line exists, or found the “critical endpoint” at the termination of that line.

“The critical endpoint, if it exists, occurs at a unique value of temperature and density beyond which QGP and ordinary matter can co-exist,” said Vigdor. It is analogous to a critical point beyond which liquid water and water vapor can co-exist in thermal equilibrium, he said.

Because of the complexity of QCD calculations, there is as yet no consensus among theorists where the QCD critical point should lie or even if it exists. But RHIC experimentalists...

See *QGP Borderline* on p. 2



Joseph Rubino D9650812

## BNL Hosts Office of Science Graduate Fellows DOE Office of Science Director Bill Brinkman and Deputy Director for Science Programs Pat Dehmer gather with 186 participants

On August 2 and 3, BNL hosted the Graduate Fellowship Annual Meeting for the DOE Office of Science (SC). Every year, a different SC lab hosts the event. Attendees included DOE SC Director Bill Brinkman, DOE SC Deputy Director for Science Programs Pat Dehmer, DOE Brookhaven Site Office Acting Manager Frank Crescenzo, SC Graduate Fellowship Program Manager Ping Ge, and 186 graduate fellows.

The SC established the DOE Office of Science Graduate Fellowship (DOE SCGF) program in 2009 to support outstanding students pursuing graduate-level training in fundamental research in areas of physics, biology, chemistry, mathematics, engineering, computer and computational sciences, and environmental sciences relevant to the SC; as well as to encourage the development of the next generation scientific and technical talent in the U.S. who will pursue careers in research critical to the SC mission at DOE laboratories and in academia.

At BNL, Lab Director Sam



Bill Brinkman



Pat Dehmer

Aronson welcomed the graduate fellows and gave them an overview of the Lab and its mission. They heard scientific talks about SC’s program areas, and toured Lab research facilities. SC Deputy Director Dehmer’s address highlighted energy as one of the country’s greatest challenges, while SC Director Brinkman’s keynote speech urged the fellows to follow their passion for science and work to solve problems including climate change and creating electric automobiles that run longer on a single charge. Brinkman also noted the importance of a scientifically literate public and charged these future scientists with contributing in this area, vital to society now and in the future.

During their visit, Brinkman and Dehmer met with Lab leadership and toured several facilities, including the National Synchrotron Light Source II construction site.

Noel Blackburn of BNL’s Office of Educational Programs (OEP) and other OEP members coordinated the effort in partnership with SC Workforce Development and Oak Ridge Institute for Science & Education staff.

Said Ken White, OEP Manager, “Watching the Olympics this summer, I was reminded of what it takes to be the best at what you do. The Office of Science Graduate Fellowship Program supports what it takes to keep America at its best in the physical sciences. Extraordinarily talented young people have been identified through rigorous selection and are being supported to practice and pursue careers in scientific research of importance to our nation. Investing in these Fellows is an important part of keeping our nation at the peak of its capability.” — Liz Seubert

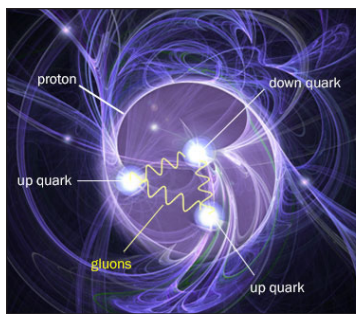
## Quark Matter’s Connection With the Higgs Heavy ion collisions delve deeper into the origin of (visible) mass

You may think you’ve heard everything you need to know about the origin of mass. After all, scientists colliding protons at the Large Hadron Collider (LHC) in Europe recently presented stunning evidence (see the Bulletin of July 13) strongly suggesting the existence of a long-sought particle called the Higgs boson, thought to “impart mass to matter.” But while the Higgs particle may be responsible for the mass of fundamental particles such as quarks, quarks alone can’t account for the mass of most of the visible matter in the universe — that’s everything we see and sense around us.

#### Quark Matter Conference

To get a grasp on what holds these visible forms of matter together — everything from stars to planets to people — you have to understand how quarks and gluons interact. That’s the essence of quark matter physics — and the Quark Matter 2012 international conference held August 12–18 in Washington, D.C.

“We’re studying the 99 percent of the mass of the visible universe that isn’t explained by the Higgs,” says Peter Steinberg, a BNL physicist and keen



The three valence quarks that make up each proton account for about one percent of its mass; the rest comes from interactions among the quarks and gluons.

participant in the Quark Matter conference.

Visible matter, he explains, is everything made of atoms, which get their mass mainly from the protons and neutrons that make up atomic nuclei. The electrons orbiting around the nucleus contribute practically nothing. But the protons and neutrons, each made of three quarks, are much more massive than the sum of their constituent particles. Where does all the “extra” mass come from?

The answer, physicists believe, lies in how the quarks interact via the exchange of gluons, massless particles that hold the quarks together via nature’s strongest force, and

interactions among the gluons themselves. To tease apart the features of this force, which gets stronger and stronger if you try to pull the subatomic quarks apart, physicists accelerate atomic nuclei (a.k.a. heavy ions) to near-light speed, where the gluons become dominant, and then steer them into head-on collisions at particle accelerators like the Relativistic Heavy Ion Collider (RHIC) at Brookhaven and the Large Hadron Collider in Europe. These collisions re-create conditions that last existed early in the universe, before quarks joined up to form protons and neutrons. Studying the behavior of “free” quarks and gluons in this primordial quark-gluon plasma should help scientists better understand the strong force, and how it generates so much of the mass we see when the particles coalesce to form ordinary matter.

So, while visible matter accounts for a mere fraction of the total universe — just five percent, the rest being composed of dark matter and mysterious dark energy — it’s enough to keep physicists like Steinberg busy for a while!

— Karen McNulty Walsh



CALENDAR  
OF LABORATORY EVENTS

• The BERA Store in Berkner Hall is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347, or Christine Carter, Ext. 2873.

— REGULARLY —

Weekdays: Free English for Speakers Of Other Languages Classes

Beginner, Intermed., Adv. classes, various times. All welcome. Learn English, make friends. See <http://www.bnl.gov/esol/schedule.asp> for schedule. Jen Lynch, Ext. 4894.

Mon. & Thurs.: Kardio Kickboxing

\$5 per class. 12:15–1:15 p.m. in the gym (Bldg. 461). \$5 per class. Ext. 2873.

Mon., Tues., Thurs., & Fri.: Tai Chi

Noon–1 p.m., B’haven Cntr (Bldg. 30), N. Rm. Adam Rusek, Ext. 5830, [rusek@bnl.gov](mailto:rusek@bnl.gov).

**Tuesdays: Hospitality Welcome Coffee**  
Will resume in September.

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

Tuesdays: Toastmasters

Two monthly meetings: 1st & 3rd Tuesdays, 5:30 p.m., Bldg. 463, Room 160. Guests and visitors welcome. [www.bnl.gov/bera/activities/toastmasters/](http://www.bnl.gov/bera/activities/toastmasters/).

**Tuesdays & Thursdays: Aerobic Fitness**  
Will resume in September.

**Tuesday & Thursday: Aqua Aerobics**  
Will resume in September.

**Wednesdays: Ballroom Dance**  
Will resume in September.

**Wednesdays: Play Group**  
Will resume in September.

Wednesdays: Yoga

Noon–1 p.m., B’haven Center (Bldg. 30). Free. Ila Campbell, Ext. 2206, [ila@bnl.gov](mailto:ila@bnl.gov).

1st Wednesday of month: LabVIEW

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

Thursdays: BNL Cycletrons Club

5 p.m., Brookhaven Center. First Thurs. of month. Andy Mingino, Ext. 5786.

Thursdays: Reiki Healing Class

Noon–1 p.m., Call for location. Nicole Bernholz, Ext. 2027.

Thursdays: Postdoc Social Night

6:30 p.m. ASAP Lounge (Bldg. 462). [www.bnl.gov/asap](http://www.bnl.gov/asap).

Thursday: Judo Class

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

Fridays: Family Swim Night

5–8 p.m. Pool (Bldg. 478). \$5/family. Ext. 2873.

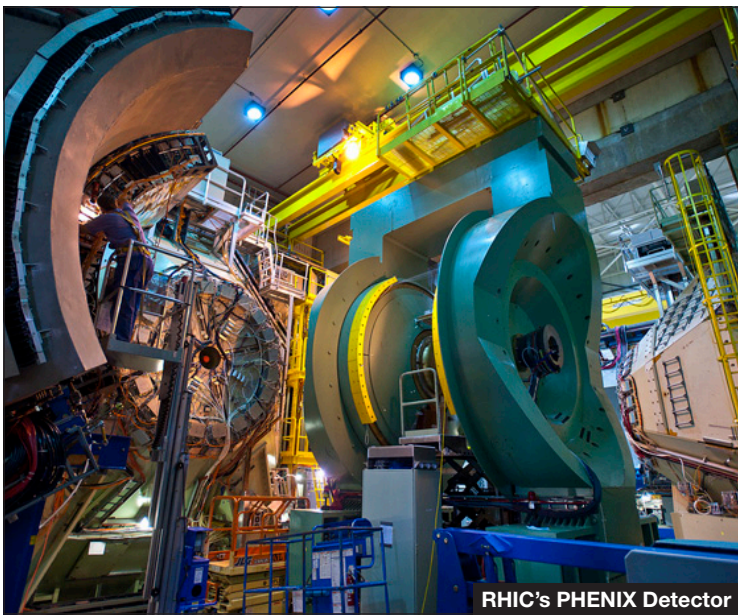
SBMS Website Redesigned

In direct response to a customer survey, an improved SBMS website now makes content easier to find. The new design is in line with the look and feel of other new BNL websites and uses tabs at the top to organize the content. See it here: <https://sbms.bnl.gov>.

SBMS is now “customizable.” The “My SBMS” tab is designed to contain links and collect important information that make SBMS personal for each user:

- You can flag documents that you use frequently and they will be collected in the “My Favorite Documents” link.
- You can specify which document updates you would like to receive using the “Subscribe to Updates” link.
- Action Dashboard: This new feature shows any open actions you may have pertaining to SBMS and Requirements Management related tasks that need your immediate attention. The page displays all actionable items with a link to that item. The number of open action items you have will be displayed on the “My SBMS” tab.

Now, users can also search SBMS from any page within the SBMS site.



Joseph Rubino D1080810

QGP Borderline from p. 1

...say they see hints in the data around 20 GeV that resemble signatures predicted to be observed near such a QCD critical point. However, much more data from future experiment runs at RHIC is required to turn these hints into conclusive evidence.

Apparent Symmetry Violations Disappear At Low Energy

One signal that disappears in gold-gold collisions at RHIC energies below 11.5 GeV is the indication of a small separation of positive from negative electric charge within the matter produced in each individual collision. Ordinarily, such a charge separation would be forbidden by the “mirror symmetry” that is a fundamental feature of QCD. But at the ultra-high temperatures of QGP, the theory allows such symmetry violations to occur in localized “bubbles,” as long as they average out to zero when bubbles from all collision events are looked at together.

“Such symmetry-violating bubbles are of crucial interest in the early, high-temperature history of the universe, where analogous bubbles are speculated to have played a central role in producing the preponderance of matter over antimatter in today’s universe, enabling our existence,” Vigdor said.

The disappearing hints of charge separation may be another signal that the lower-energy RHIC collisions are no longer producing QGP. But it’s also conceivable that the hints arise instead from a “background” phenomenon that is related to the almond-like shape of the overlap region formed when two spherical gold ions collide

in not quite head-on fashion.

Head-on collisions of football-shaped uranium ions aligned in upright positions like footballs set for kick-off — conducted for the first time during the 2012 RHIC run, and made possible by a new ion source at RHIC — are allowing scientists to study the effects of this interaction region without the strong surrounding magnetic field also produced in the off-center gold-gold collisions (which is necessary for the interesting charge-separation signal).

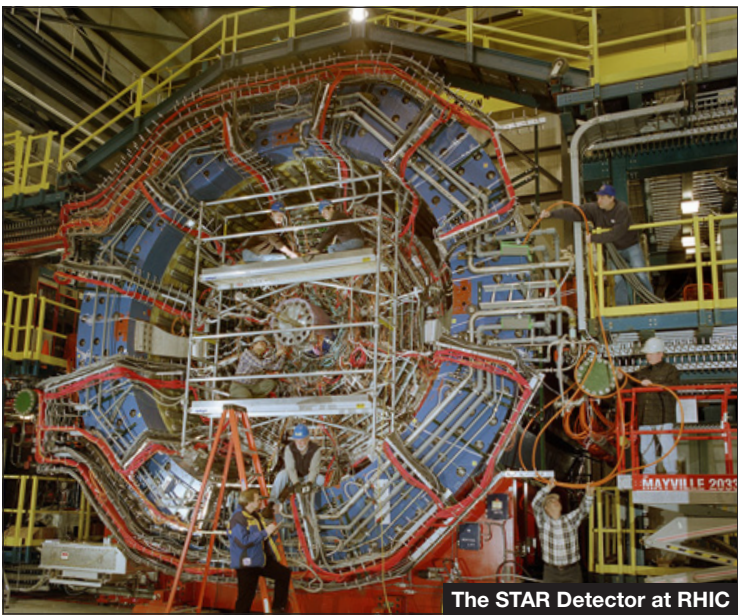
Results so far, reported by STAR physicists at Quark Matter 2012, seem to rule out the role of the background effect. If subsequent analysis confirms this early finding, the uranium-uranium collisions will provide further evidence for the symmetry-violating bubble interpretation of the gold-gold data, and for the disappearance of QGP at the lower RHIC energies.

From Ordinary Matter To Plasma

The way quarks and gluons are arranged in ordinary matter affects how the plasma forms, and also modifies production of experimental probes of the plasma’s properties. Teasing out effects of the plasma on these probes requires good knowledge of the probes before they encounter QGP.

To get that important information, the RHIC experiments have collected a large data set from collisions of gold ions with deuterons (the nuclei of heavy hydrogen).

At Quark Matter 2012, PHENIX physicists report that there are fewer high-momentum single hadrons and collections of hadrons called “jets” produced in dead-on central



Roger Stoutenburgh C9524-01

deuteron-gold collisions than more glancing deuteron-gold collisions.

“We expect jet suppression in quark-gluon plasma, because jets lose energy in dense matter such as the plasma,” said PHENIX spokesperson Barbara Jacak, a physicist at Stony Brook University. “But this result shows that we have to correct for this initial state effect when figuring out how much the plasma suppresses the production of jets.”

The initial state is related to the arrangement of quarks and gluons deep inside the gold nucleus, which some theories predict could be a condensed form of gluons called color-glass condensate, as hinted at in earlier results published by PHENIX.

Force Between Quarks And Antiquarks

Other new RHIC measurements reported at Quark Matter concern the probability of heavy quarks (bottom and charm) and their antimatter counterparts pairing up to form bound states called “quarkonia” within the QGP and in the “cold” nuclear matter probed in the deuteron-gold collisions.

QCD tells us that the force between a quark and an antiquark increases in strength as they are pulled apart, as though they were connected by an invisible rubber band. But the strength of this force should be reduced in QGP. So physicists expect the formation of quarkonia to also be reduced in QGP, with the probability of finding such species decreasing with larger-size bound states.

The STAR experiment reported new results consistent with this expectation by studying different size bound

states of bottom quarks and antiquarks. PHENIX has studied suppression of bound states of charm and anti-charm quarks in various beam combinations, both with and without plasma formation. New results indicate that their formation is already suppressed in collisions of deuterons with gold nuclei, when no QGP is formed.

“This reflects both the reduced production rates for heavy quarks and the fact that the bound state sometimes breaks up as it passes through normal (cold) nuclear matter,” said Jacak. “It is crucial to quantify this if we are to understand QGP effects on the binding,” she said.

“These new results on the phase boundary, symmetry-violating bubbles, initial state effects, and production of quark-antiquark bound states illustrate how scientists are exploiting RHIC’s unique versatility for precision determinations of the properties of quark-gluon plasma,” Vigdor said. “It is this versatility, in combination with dramatic advances we’ve made in the rate of collisions provided at RHIC, that will allow our scientists in the coming decade to answer the pointed questions raised by RHIC’s exciting discoveries about this early universe matter.”

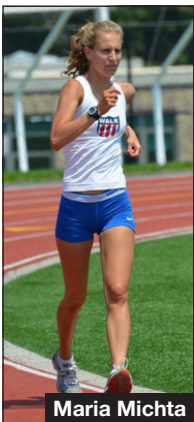
Research at RHIC is funded primarily by the DOE Office of Science, and also by the agencies and organizations listed here: <http://1.usa.gov/SUjP7h>.

DOE’s Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time. For more information, please visit <http://science.energy.gov/>. — Karen McNulty Walsh

Update On BNL’s Olympic Athlete

The Olympics are over, and BNL’s own Olympic athlete, Maria Michta — daughter of National Synchrotron Light Source (NSLS) scientist Richard Michta and one-time summer intern at BNL at the National Synchrotron Light Source — broke her own personal best to finish 29th out of 61 in the women’s 20 kilometer racewalk. She walked the 12.4-mile course in one hour, 32 minutes and 37 seconds.

Michta’s time, which was two minutes and 25 seconds off her previous personal best, is faster than any other Ameri-



Maria Michta

can 20K walker has achieved in the Olympic Games. Soon, however, she will be back at Mount Sinai Medical School, where she is pursuing a doctorate in microbiology.

Before leaving for London, Michta told a Bulletin reporter that she had two goals: to reach the Olympic A standard for racewalking by finishing in under 1:33:30, and to place in the top 50 percent in her competition. She did both!

Congratulations, Maria, and best of luck for the future.

Liz Seubert

GSA Auction Government Vehicles 8/17

An auction of government vehicles will begin today, August 17, run by General Services Administration (GSA). To find out more about what is being auctioned, go online to [GSAuctions.gov](http://GSAuctions.gov), then enter Sale No. 21QSCI12072. The contents were just posted today. For more information, contact Jerry Quigley, Ext. 4527 or 457-3856.

Sidewalk Closed on Brookhaven Ave. Along ISB Construction Site

The sidewalk on the south side of Brookhaven Avenue along the construction site for the new Interdisciplinary Science Building is closed for several weeks while crews replace the walkway.

Please do not walk in the street along the construction site fence. Anyone walking in this area should instead cross Brookhaven Avenue safely to continue along the north side of the street. As always, please use caution in the area and obey all safety personnel and postings.

For more information, contact Chris Ogeka at Ext. 2363 or [ogekach@bnl.gov](mailto:ogekach@bnl.gov).





# BNL, SUNY’s Zimpher and Killeen Send Off the 2012 Summer Students

Interns, mentors, Laboratory leaders, and distinguished guests came together last week to commemorate the accomplishments of BNL’s summer students. This summer, more than 150 individuals participated in one of the nine different internship opportunities offered by Brookhaven Lab’s Office of Educational Programs (OEP).

Lab Director Sam Aronson addressed the crowd, emphasizing the value of a research experience at Brookhaven, both in technical growth and personal connections. Next, Frank Crescenzo, Acting Manager for the DOE Site Brookhaven Site Office, urged students to use what they had learned at Brookhaven to help build a better world.

“At the beginning of the summer, we encouraged you to continue pursuing a career in science or technology or engineering,” Crescenzo said. “We meant it then and we mean it now.”

Following Crescenzo was Nancy L. Zimpher, State University of New York (SUNY) Chancellor and this year’s keynote speaker. Zimpher, who is the first female SUNY Chancellor, holds a doctorate in teacher education and higher education administration from Ohio State University. She previously served as the Chancellor of the University of Wisconsin-Milwaukee and the President of the University of Cincinnati.

In her talk, Zimpher discussed “The Power of SUNY,” her strategic plan to impact the world positively through the public education system.

“Every organization ought to have an ambitious, aspirational, and audacious goal, and the State University of New York has one. It simply is that we can be the economic engine for the revitalization of the state of New York and the quality of life of its citizenry,” she said. Zimpher then encouraged the students to plan, prepare, and work toward achieving their own goals.

Zimpher is working to infuse research and internship experiences into college curricula. She related her efforts back to Brookhaven, which has a partnership with SUNY in nanoscale science research, and stressed the value of collaborative effort.

OEP Manager Ken White also highlighted the benefits of collaboration and networking. “The people you met this summer — the mentors, the faculty you may have worked with, the postdocs, the students next to you — can become lifelong friends or acquaintances.” White also noted the BNL mentors’ generosity in sharing their time and expertise with the students.

The closing ceremony was preceded by a two-day poster session in Berkner Hall, where the students showcased what they had learned and achieved during their ten weeks on site at BNL. The session included presentations on a wide variety of research areas at the Lab, including biofuels, spintronics, x-ray microcopy, radio telemetry, and superconductors. On

Above: Some of BNL’s 2012 summer students from State University of New York (SUNY) schools meet with (fourth and fifth from left): Nancy L. Zimpher, SUNY Chancellor, and Timothy Killeen, President of the SUNY Research Foundation.

Below, first: (from left) BNL Office of Educational Programs Manager Ken White, SUNY Chancellor Nancy L. Zimpher, BNL Director Sam Aronson, DOE Brookhaven Site Office Acting Manager Frank Crescenzo

Below, second: Summer students at the poster session



hand to congratulate the students were Timothy Killeen, the SUNY Research Foundation President; David Lavalley, SUNY Executive Vice Chancellor for Academic Affairs; and Johanna Duncan-Poitier, Senior Vice Chancellor for Community Colleges and the Education Pipeline.

“This summer, I’ve gotten the impression that the work I’m doing is really going to make a difference,” said Lamar Morgan, a Stony Brook University student who spent his summer working on PHENIX detectors. Morgan was featured in a short wrap-up video created by Brookhaven videographer Alex Reben. “Knowing that I can have a hand in the progression of a project known on the national level means a lot to me.”

## STEM Hub Connections

During the Chancellor’s visit, a luncheon was held with Long Island Science, Technology, Engineering and Math (STEM) Hub partners, including representatives from academia and industry. Also attending was Margaret Ashida, the Empire State STEM Director, who has been a champion for the Long Island STEM Hub. — Aviva Hope Rutkin

## In Memoriam

**Winfield Lewis**, who joined the Police Department as a guard A with life number 454 on March 22, 1947, became a technician B in the Department of Nuclear Energy in 1956 and retired from the Department of Applied Science as a technical associate II on April 30, 1983, died at 91 on June 6, 2012.

**Alfred Hamilton**, who joined the Design Group in the Accelerator Project as a tracer on April 21, 1948, and retired from the Physics Department as a senior designer on April 23, 1983, died on June 5, 2012, at the age of 88.

**George Warner**, who joined the Alternating Gradient Synchrotron Department as an intermediate technician on August 12, 1963, and retired as a technical associate I on May 14, 1993, died on January 4, 2010. He was 80.

**Elias Escobar**, who joined the Staff Services Division on September 2, 1987, as a resident custodian, then moved to the Plant Engineering Division, and retired on December 31, 1992, died on December 3, 2009. He was 81.

**Gerard Mayman** joined the Physics Department as a senior technician on February 15, 1963, moved to the Department of Applied Science in July 1969, retired as a senior technical specialist on February 28, 1999, and died on May 30, 2009. He was 75.

**John Markott**, who arrived at BNL on June 24, 1947, as a sheet metalworker B with life number 1097, became a master metalworker in 1957, retired from the Alternating Gradient Synchrotron Department as a technical associate I on September 30, 1986, and died at 84 on January 9, 2009. He had returned for five months in 1990 as a guest mechanical technician.

**Walter Mason** joined the Staff Services Division as a resident janitor on September 18, 1967, and retired as a custodian group leader on September 29, 1995, died on August 24, 2008, at age 83.

**Izydor Kujawski**, who, on December 19, 1960, became a Lab janitor in the Plant Maintenance Division, died at the age of 92 on June 3, 2007. He had retired as a custodian from the Plant Maintenance Division on March 21, 1980.

**William Osborne**, who joined the Plant Engineering Division as an electrician A on November 15, 1982, and retired from the Lab on September 29, 1989, died at 77 on May 27, 2007.

## One-on-One Retirement Counseling

Consultants from Fidelity Investments and TIAA-CREF will come to Brookhaven to meet with employees on several days in August and September. The consultants will help you: understand the importance of protecting your assets against inflation, find the right allocation mix, learn about retirement income flexibility, and compare life-time income vs. cash withdrawal options.

**TIAA-CREF:** A TIAA-CREF consultant will visit BNL on August 23 and 29; and September 7, 17, 20, and 27. For an appointment, call 1-800-732-8353 or go online: [www.tiaa-cref.org/bnl](http://www.tiaa-cref.org/bnl) and select “contact” on the bottom of the page, then “contact us on line” and “schedule a personalized advice consultation.”

**Fidelity Investments:** A Fidelity Investments representative will visit BNL on September 21. To schedule an appointment, please call 1-800-642-7131 or go online at [www.Fidelity.com/atwork/reservations](http://www.Fidelity.com/atwork/reservations).

## Upcoming BERA Trips

Purchase tickets at the BERA Store in Berkner (Bldg. 488), which is open Monday through Friday from 9 a.m. to 3 p.m. All tickets are non-refundable and are for those 21 years and older unless accompanied by BNL employee/parent. More details are available online: [www.bnl.gov/bera/recreation/events.asp](http://www.bnl.gov/bera/recreation/events.asp).

**U.S. Open Tennis:** Tuesday, September 4, in Queens, NY. Note: This is a regular workday.

Tentative times: depart at 8:30 a.m., leave the event at 7:30 p.m. \$60 per person, includes admission and transportation.

**Big E State Fair:** Saturday, September 15 in West Springfield, Mass. Leave BNL at 8 a.m., arrive around 11 a.m. and leave fair at 5 p.m. \$45 per person, adults and children, those under age 2 are free.

**Greenwich Village Scavenger Hunt:** Saturday, September

22. Depart BNL at 9 a.m., leave city at 5 p.m. Scavenger hunt 11 a.m.-1:30 p.m. and “Do As You Please” until 5 p.m. For ages 12 and older. \$40 per person.

**NASCAR Race:** Sunday, September 30, in Dover, Delaware. Depart BNL at 5 a.m., leave Dover at 6 p.m. \$200 per person includes admission, program, souvenir, and transportation on luxury bus with catered food and beverages.

**L.I. Ducks Baseball:** Tickets are available at the BERA Store.

## CALENDAR

— WEEK OF 8/27 —

Tuesday, 8/28

### 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.

— WEEK OF 9/3 —

Monday, 9/3

### Labor Day, Lab Holiday

No Bulletin this week.

Wednesday, 9/5

### WAGO Demo Van on Site

1-3 p.m. Berkner Hall parking lot. WAGO representative Tony Silvestri will bring the demo van to display terminal block, ethernet switches and other electrical control panel components manufactured by WAGO. Contact Joe Kanzenberg, Powertech Controls, Inc., 63-368-6678, Ext. 218.

— WEEK OF 9/10 —

Wed. & Thur., 9/12

### ASAP Career Workshop

8 a.m. Medical Research Center, Bldg. 490, Large Conference Room. Two-day workshop for the Association for Students & Postdocs (ASAP) at BNL on “Preparing for a Career After Your Postdoc,” presented by the American Chemical Society and coordinated by Suzanne R. Golisz, Ext. 3816. Registration required (deadline, Sept. 5; additional guest deadline: Aug. 20). See [www.bnl.gov/pcapworkshop/](http://www.bnl.gov/pcapworkshop/).

## Arrivals & Departures

— Arrivals —

Lin Bai ..... Biology  
David Cohen ..... Site Resources  
Liangming Hu ..... Chemistry  
Lars Husebo ..... Legal Office  
Vladimir Tishchenko ..... Physics

— Departures —

Peter Cameron ..... Photon Scis  
Jun-Ki Choi ..... Sust En Techs

## Discounts for BNLers

The BERA Employee Discount Program has a list of businesses giving BNLers a discount. The businesses are not recommended or endorsed by BNL or BSA. Any discounts may be discontinued without notice. For the list, go to [www.bnl.gov/bera/](http://www.bnl.gov/bera/) and click on “Employee Discounts” in the left-hand column, or check in at the BERA Store, Berkner Hall.

## School Supply Drive

BERA is collecting school supplies for local families who cannot afford pens, pencils, backpacks, etc. for their children. Please donate supplies at Bldg. 400 lobby or the BERA Store, Berkner Hall. Cash is also welcome: please give to Chris Carter or Joanne Rula-Delles, Bldg. 400, or at the BERA Store.





Alex Fleben V0020812

## PET's Morning Meetings Help Define and Solve Safety Concerns in Quick, Efficient Way

David Alexoff and the Positron Emission Tomography (PET) team instituted morning meetings to discuss safety concerns, equipment issues, share ergonomic advice, and more. How are the meetings working out for the PET team? Watch a video online to find out: <http://bit.ly/PavoaC>.

**Safety** makes science possible at Brookhaven National Laboratory

### Classified Advertisements

Current job openings and a statement of job placement policy at BNL are available on the homepage at [www.bnl.gov/HR/ca-reers/](http://www.bnl.gov/HR/ca-reers/). To apply for a position, go to [www.bnl.gov](http://www.bnl.gov) and select "Search Job List." For more information, call Ext. 2882.

#### Motor Vehicles & Supplies

11 TOYOTA RAV4 (MDL 4432K) – 12.2K mi. silver met, orig owner, excel cond, 2.5L DOHC 4cyl, dual vvt-i, 4spd, awd, a/t, a/c, rf rack, more. \$17,900 neg. 229-6162.

11 H-D WIDEGLIDE – w/PowerCommander, Vance & Hines pipes, S&S air cleaner, Dyno tuned, excel cond, w/OEM parts avail. \$13,000 neg. Dave, 902-5453.

10 PORSCHE CAYENNE – 20.5K mi. black w/black int, excel cond, fully loaded incl navigation. \$65,000. Kathleen, Ext. 7114.

09 JAYCO TRAVEL TRAILER – 26.5', front BR w/q/bed, lg rear bath, a/c, like new, used only 4X, v/clean. \$8,950 neg. John, Ext. 5930.

08 FORD EDGE SEL – 34K mi. Sync Computer, new tires, s/roof, chr. whls, a/c, p/w, p/d, p/l, rem strt, 6/CDSAT Radio, grt cond. \$17,200 neg. Ext. 5476, 872-9268.

04 HONDA ACCORD – 89 mi. a/t, 4-cyl, am/fm/cd, orig owner, grt cond, black, a/t, a/c, p/s, p/w, rem strt. \$8,700 neg. Ext. 7370, 331-0311, goldbear8@yahoo.com.

03 TOYOTA CAMRY – 110K mi. XLE V6 3ltr eng, a/t, a/c, c/c, lthr, dual htd/pwd seats, 6CD, moonfr, new tires. Pics at <http://tinyurl.com/c64rfpo>. \$8,200 neg. Eli, Ext. 5910.

03 KAWASAKI KLR250 – 6.85K mi. On/Off Road Enduro. \$1,750. Kc, 294-5392.

02 CHRYSLER SEBRING CONVERTIBLE – 67K mi. LXI 2.6 ltr eng, a/t, a/c, c/c, abs, lthr, pwr drv seat, cd/fm/am, new wtr pump, t-belt, pics. \$4,500. istavitski@bnl.gov.

01 DODGE GRAND CARAVAN – 140K mi. orig. owner, silver, CD player, c/c, V6. \$2,500 neg. 382-7325.

96 H-D FLH – w/93ci S&S Sidewinder kit, S&S E carb, PowerCommander, V&H true duals & 6-spd trans, solid tourer. \$7,500 neg. 902-5453.

96 FORD TAURUS WAGON – 155K mi., vg cond. Runs well. Third row bench seat in back. \$1,500 neg. Paul, Ext. 7727, 960-8410.

95 ACURA INTEGRA – 150K mi. white, 5spd, m/rf, lthr, alloy wheels, CD. \$2,900 neg. Mark, Ext. 3172, mmcneil@bnl.gov.

95 FORD ECONOLINE E 250 – 147K mi. E 250 cargo van 6cyl, a/t, am/fm, a/c ps/pb/rearfringed glass, runs well, body gd, \$3,000 neg. 344-8910, or dono@bnl.gov.

FORD VAN LADDER RACKS – weather guard alum 3 pce rack w/air deflector vg cond \$125.00 fits Ford econo vans 631-467-269. David, Ext. 8584.

#### Boats & Marine Supplies

21' CLIPPER MARINE 1972 CM21 MKII – !FREE! sailboat, swing keel, flush deck, incl 3 sails, main, jib, genoa, alum mast, boom & rigging lines, trailer, gd proj boat. 960-8410.

21' SEASWIRL STRIPPER – Walk-Around w/8.5 beam 175hp OceanPro Johnson under 200 hrs, Trailer, Windless, Flometer, Radio CD, more, excel cond. \$10,000. 516-799-6401.

#### Furnishings & Appliances

BEDROOM SET – 2 dressers, mirror, 2 night stands, headbrd/\$175, more furn, pics. 793-9111 or wjleonhardt@bnl.gov.

BEDROOM SET – wood trad, headbrd w/ frame, 2 night stands, lg dresser, tall chest, mirror, pics, \$600. Ext. 7235 or fitz@bnl.gov.

CHANDELIER – beautiful glass & brass, excel cond, pic avail/\$100. difilip@bnl.gov.

COFFEEMAKER, MIXER – Bick&Dckr 8-Cup Progmbl. Coffeemkr/\$15, B&D PowerPro 250-W 6-spd handheld mixer w case, \$10, sandwich maker/\$10. Raluca, Ext. 3235.

DINING ROOM – fr. Stanley's in Patchogue, drk wood, Hutch, table/2 leaves & table pads, seats 10, 6 chrs, pic, \$1,200. difilip@bnl.gov.

DINING ROOM SET – formal table, lg w/3 leaves, 18" ea, 6 chairs, seats at least 12, ask/\$600. Lynda, Ext. 7235, fitz@bnl.gov.

DINING ROOM – table, 6 chrs, hutch & buffet, \$125 also more furn, request pics. Ext. 2378, 793-9111, wjleonhardt@bnl.gov.

HEADBOARD / FOOTBOARD – All wood qu sz hdbd/ftbrd, pics available - \$200. Sam, Ext. 8967 or sretenski@bnl.gov.

HOME ENTERTAINMENT CENTER – Oak 54Wx47Hx16D w/wheels, still in plastic bag, excel cond, pic avail, arrange pick-up in Smithtown, \$50. Ext. 6344, phraner@bnl.gov.

HOOVER UPRIGHT VACUUM – Windtunnel, 12 amp motor, allergen filter, 29' cord, attachments, 2 ext wands, edge groomers, 15" w, like new, \$60. 516-241-4598.

ICE CREAM MAKER – Cuisinart ICE for ice crm/frozn yogurt, \$10; Twin oak bed-frame, built 1930, pineapple design; pics, \$100/obo. Ext. 4905 or mbarsalo@bnl.gov.

IKEA FURN AT HALF PRICE – on brand new stuff bought Oct 2011, mvng sale, u-pic-up, price/neg, pics and price at <http://tinyurl.com/7xpnphx>. 229-6162.

KENMORE 'ELITE' ELECTRIC DRYER – Brand new/never used-7.1 cu.ft, Md #69002 -white. Orig \$1,058, ask \$499. 361-9054.

KENMORE FREEZER REFRIGERATOR – brand new/unused 22.7 cu ft bottom freezer/, white, orig \$1,765, ask/\$799. 361-9054.

KIDS LOFT BEDRM SET – Amer Woodcrafter, 4 drawr chest, 3 book shelves, 3 drwr desk, chr, 5 drwr dresser ladder, loft bed frame. Box & mattress inc. All \$900. Pix. 868-0357.

KINGBED, BRKFAST TABLE 4 CHAIRS – pickup excel cond King Bed set/\$300; solid wood breakfast table w/4 matching chairs/\$150. 801-2121 or sbabu@bnl.gov.

TRIBECA BEDROOM SET – Espresso set, incls dresser, mirror, night stand & q/bed w/headbrd/ mattress excel cond, \$600/ neg, photos avail. Raluca, Ext. 3235.

#### Tools, House & Garden

HUSKY WORK BOX – Apx. 48" L X 30" W X 36" H \$50. Kc, 294-5392.

#### Audio, Video & Computers

COMPUTERS, SLINGBOX – Dsktp PC (3GB RAM, 500GB HD) w/20.1" LCD \$175; Dell Inspiron Mini 10" Lptop (2GB RAM, 250GB HD) \$125, Sl'box Pro HD, \$200. mwahler@bnl.gov.

ONKYO AV RECEIVER – TX-SR605 receiver, 90wts x 7 chnnls, multi-room, HDMI, video upscaling, Audyssey auto-setup, more, \$175. Travis, shrey@bnl.gov.

SAMSUNG HOME THEATER – 1,000-Watt Blu-ray, 5.1 new Nov'11 orig/\$300, ask/\$150, moving sale, u-pic-up as is, pics/ price <http://tinyurl.com/7xpnphx>. 229-6162.

SPEAKERS & POWER CONDITIONER – Pioneer S-VSL3\*2 \$40, BELKIN AP11000-10 \$30, pic at <http://tinyurl.com/9dzabzu>. Kensuke, Ext. 5969 or okada@bnl.gov.

SURROUND SOUND SYSTEM – Panasonic, gently used, w/iPod dock. Pics. ask/\$80. 347-581-3731, arajnauth@bnl.gov.



Michael Herbert D0100812

Striving to keep pace with evolving firefighting needs and stay up to date on the safest approach and state-of-the-art techniques to fight wildfires, BNL's Fire Rescue Group recently participated in a two-day training course.

The course, intentionally designed to "bridge the gap" between structural and wildland firefighting techniques, was held at BNL in cooperation with the New York Wildfire and Incident Management Academy, New York State Department of Environmental Conservation Forest Rangers, and the Central Pine Barrens Joint Planning and Policy Commission. The program included classroom and field instruction exercises where participants learned about

Some members of BNL's Fire Rescue Group with New York State Department of Environmental Conservation Forest Rangers. The rangers recently visited the Lab and provided classroom and field training to BNL firefighters on wildland firefighting techniques.

deployment and the proper use of personal fire shelters.

"This rigorous training was essential," said Michael Pena, manager of the Laboratory Protection Division. "There are always new techniques and strategies to fight wildfires that can help keep us safe and assist us in diminishing what can become catastrophic events. BNL's already highly trained fire rescue crew is grateful for the partnership with these lead organizations and for the two-way exchange of ideas and expertise."

"Based on history and the

recent wildfires in our area, this training will help keep us at the top of our game and response-ready for future incidents," said Charles LaSalla, BNL's fire chief. "It also sets the stage for additional sophisticated wildfire training for firefighters from around the world that will be offered at the upcoming 15th annual New York Wildfire and Incident Management Academy scheduled to be held at BNL this fall." — Jane Koropsak

For information on the upcoming 2012 New York Wildfire and Incident Management Academy, go to: [www.nywima.com](http://www.nywima.com).

#### Sports, Hobbies & Pets

BEAGLE PUPPIES – A.K.C. reg, pure breed, all shots, great family pets/hunting, 8 avail. Frank, 965-1587.

CAMPER – Shamrock by ForestRiver, expands 16-24' ac/heat, 2 beds-q/full, dinette, m/w, oven, frig/freezer, full ba, am/fm/cd, awning, slps 6, towable w/V6, \$6K. 786-6814.

CAMPER KODIAK K235 – excl cond, 23'L, slide out, dinette, couch, 2/q beds, mw, oven, frig/freezer, full ba, heat, a/c, awning, antenna, cable, slps 6+, \$6500. 744-9308.

CHILDS DIRT BIKE – Chest protector & helmet \$600, u-pic-up. dmcarthur@bnl.gov.

NY YANKEES TICKETS – 2, vs Boston Red Sox at Yankee St, Mon Oct 1, 2012 at 7:05pm, Jim Beam Suites Section 319, Row 2, \$150 per ticket. Laurie, 988-9442.

ROCK CLIMBING GEAR – Stealth C4 5.10 Men's shoes, sz US 12, \$45; Blk Diamond harness, men's L, \$35; Petzl Attache locking carabiner, \$7; belay, \$5. Brian, Ext. 8240.

ROOF RACK BIKE CARRIER – THULE 599XTR Big Mouth upright (no lock), leave tires on, attaches to THULE load bars (sold sep), \$80. bmccaffrey@bnl.gov.

SURF BOARD – "Roxy", 7.5', light blue w/ pink detail, cushioned non-slip surface, leach incl, excel, \$300. 219-7196.

THULE ROOF RACK – 50" LB50 load bars, 2 pack w/end caps, \$50; THULE 400 r/rack foot pack w/o locks, \$25. bmccaffrey@bnl.gov.

YANKEE TICKETS – vs Red Sox, Fri 8/17, 2/tix sec 234 row 19 aisle seats, \$60/ both, \$50/face value. Kirk, 840-7188.

#### Miscellaneous

CHILD SEAT – COSCO \$5, Kensuke, Ext. 5969 or okada@bnl.gov.

POOL LADDER – A-shaped, goes into agp, hardly used, pics avail, \$50. Nina, Ext. 5894, 813-0497 or vbri1@aol.com.

TOYS – Toss Across \$5, Play Hut \$15, FP Basketball Hoop \$15, Smartcycle w/2 games \$30, HandyManny Workbench w/tools \$30, Spiderman Idog \$5, pics. difilip@bnl.gov.

YAMAHA PIANO & BENCH – brown walnut, excel cond, \$1,500. 288-3112.

#### Community Involvement

FLAPJACK FUNDRAISER BREAKFAST – for North Shore Horse Rescue @ Applebee's Riverhd, Aug 26th, 8a-10a, \$10/ meal incl pancakes, sausage, scrambled eggs and beverage. 334-8258.

RIVER FRONT 24 RUN/WALK – 3rd Annual Endurance Run/Walk in Riverhead. Benefit for Suffolk County United Veterans, 11/10-11/11. Teams welcome. <http://tinyurl.com/9242xow>. riverfront24@gmail.com.

VENDORS WANTED FOR CAR SHOW – Car Show at The Big Duck, 9am-4pm, Sunday 9/16 (raindate 9/23), Vendor spots \$40. 284-3737 or bigduck.org. Ext. 8962.

#### Happenings

BUILD-A-BOAT & RACE CHALLENGE – Wanted: Teams of 2 to design, build, & race a small boat using only wood & Sikaflex as adhesive/sealant. Aug. 18 & 19. Port Jeff Harbor. To benefit LISEC. Brian, Ext. 8240.

EMS FUNDRAISER – support Rocky Point Fire Dept EMTs by eating at breakfast at Miller Place Applebees - \$10/ticket Sep 22, 8am – 10am. Mark, Ext. 7978.

#### Free

21' SAILBOAT W/TRAILER – Clipper Marine 1972 CM21 MKII, swing keel, flush deck, 3 sails: main, jib, genoa, alum mast, boom & rigging lines, Paul, 960-8410.

AIR CONDITIONER – 12000 Btu, works well, energy effit, needs plastic side panels. Steve, Ext. 4719 or sbennett@bnl.gov.

RESCUED FEMALE 1 YEAR OLD CAT – Spayed v/sweet, loving gray/white. Was kept in cage for 1st yr of her life, Save her please. Colleen, 334-4589.

#### Wanted

ADOPT-A-PLATOON – Monetary donations gratefully accepted toward mailing shipments to our platoon stationed overseas and to send goodie packages to BNL family members. Thank you. Joanne, jrula@bnl.gov.

BNL FAMILY MEMBER IN MILITARY – If you have a family member that has been deployed overseas, please contact Adopt-a-Platoon so we may send them a goodie package. Joanne, jrula@bnl.gov.

BROKEN SOLAR CELL PIECES – Free broken solar cell pieces wanted. Any size, any shape. Wei-Fu, Ext. 4360, wfchen@bnl.gov.

ENCLOSED TRAILER – Smaller enclosed trailer, must fit a Harley. Kc, 294-5392.

FIRE WOOD – Split and delivered to Flanders. Good hard wood. Does not have to be seasoned. Christine, Ext. 4238.

FIREARMS – new or old, will pay Fair \$ depending on age and cond. Please, no firearms on BNL property. Joe, 487-1479.

JETS TICKETS – 9/9 Buffalo Bills Vs. Jets Home Game. Kc, 294-5392.

MEDICAL KNEE ROLLING AIDS – needed to use instead of crutches. Looking for donations, to help people in need. Maryellen, Ext. 3328 or mmccabe@bnl.gov.

USED BOAT TRAILER – To haul motor boat 30' x 10' beam weighing 11,500 lbs. Must be in good to excel cond. 988-1130.

LCD TV – Looking for gd used Flatscreen/ LCD TV. 20"-32". ccardone@bnl.gov.

#### For Rent

CALLICOON, NY – Villa Roma Resort Sept 02 till Sept 9. Two bdrm, 2 ba. \$800/ wk. Pat, Ext. 2539, 806-2124.

CENTEREACH – One bdrm; pvt ent; full kitch; full ba; off strtp pkg; own thermostat; month to month; one mo rent plus sec dep. 631-972-3902. \$975/mo. 546-8600.

MASTIC – 3brm, 2ba house 2 blocks to water, 10 min to bnl. \$1,900/mo. 848-8928.

MIDDLE ISLAND – 2 bdrm mint condo, 1st flr: eik, l/r, den, bamboo flrs, stl applncs - 2nd flr: 2bdrms full ba, w-in closet, laundry - 1-car gar. Swm Pool. \$1,700/mo neg. 384-5472.

MIDDLE ISLAND – well maintd modern Victorian hse, 4bdrm 2.5bth, st'less applis, cherry cab's, ceram ba, f/p, a/c, priv backyard, gar, mins to Lab. \$2,200/mo. Ext. 3621.

MILLER PLACE – Share furn. Col home in prof. area 10 mi. to BNL. l'net, ac/heat, TV cable, own bdrm. Incl. all. Immed occ. Responsib no/pet/nonsmokr. \$750/mo. 744-8386.

RIVERHEAD – 3 bdrm, 2 full ba, ranch, kit, dw, l/r, d/r, w/d, gar, new windws & furn, nr shops, no smkg/pets, refs, credit ck reqd, 1/ mo sec & util, Sec8 ok. \$2,150/mo. 512-6470.

ROCKY POINT – Studio Apt avail now, grnd level, priv ent, l'net, Dir TV, a/c, cathedral ceiling, 1 pers, no pets. incl all. \$875/ mo. Robert, Ext. 3186, 516-250-7764.

SHOREHAM – 1 bdrm furn apt, l/r, d/r, full kitch & ba, no smkg/pets, pvt ent/drvwy. util incl, 1/mo sec, 5/min to Lab. \$1,150/mo. Judy, 375-7959, judyb55@optonline.net.

WADING RIVER – 3 bdrm., 1 bath, kit w/ dining area, lg. l/r, fenced yard, SWR schools, no pets/smkg., 1 mo sec & refs req'd, available 9/1. \$1,725/mo. 886-1545.

#### For Sale

BAYPORT – 2300 sq ft, F. L. Wright-style hse, 1 wooded acre nr Grt S. Bay, 4 bdrm, 2 1/2 ba, open flr plan, lg windws, rad. heat, scr. porch, excel schools, \$515,000. 617-332-6264.

CORAM – lg 1 bdrm co-op, updated kitch & b/r, laundry across from unit, in/outdr pool & gym. \$104,900. Warren, Ext. 8329 or whalbig@bnl.gov.

MANORVILLE – 8+ acres in Horse Country, backs to Pine Barrens, Trails, Peconic Rvr, Cape w/lg rms, 4 bdrm, 3 ba, lg eik, den, lr/ dr, wd/stove. \$525,000 neg. 208-3066.

ROCKY POINT - 4 brm, 4 ba chalet, 1.2 wooded acres, nr beach, Eik, granite cntrs, ss applis, huge lv & porch, dr, fp, hdw flrs, a/c, 2car gar, igs, legal m/d. \$435,000. 631-894-4320.

SAYVILLE – 10 rm ranch w/Florida rm, cac, ogp & deck, den w/fp, 1.5 ba upstairs, 1/2 ba down, new kitch, all applis, 3-zone heat sys/gutters. \$350,000. 750-3385.

SMITHTOWN – mod, high ranch, dd end, rm for mom, attic, 1.5 gar, bsmt, f/p, lndry rm, cac, 4 bdrm incls master, 3 full ba, den, v/priv, nr town, park, RR. \$429,000 neg. 516-808-3422.

SMITHTOWN – 3 bdrm, 1ba high ranch, 1/3 of acre. Motivated seller. \$325,000 neg. Kim, 603-9475 or wolferdsdorf@bnl.gov.

#### Services

A list of services provided by BNLers and their family members is available on the Intranet homepage after the ads in "See all ads" (bottom right). To get the list by mail, call Ext. 2346, leave your name & address (clearly) or email [lseubert@bnl.gov](mailto:lseubert@bnl.gov).