

Particle Post February 2008

"Love is composed of a single soul inhabiting two bodies." ~Aristotle

Previous issues

A Note From Our Chairman



If you did not attend the "State-of-the-Department" talk on February 1, you have an opportunity to view my slides on our website. The bottom line is that for this year, FY2008, we have to be frugal in our purchases and overtime. Although the budget looked great prior to Christmas, the net result was an Omnibus Bill that hurt all of science and some areas more than others. The nuclear physics program took a hit, but fared much better than most other areas. The president's FY2009 budget again looks very good, but this being a presidential election year it is likely to be dead on arrival. An educated guess is that we will again see a continuing resolution in October that might extend until well after the inauguration of the next president. The FY2009 budget will certainly be contentious.

We just completed a successful deuteron-gold run. Both PHENIX and STAR obtained substantial data sets. We are now starting up polarized proton operations, which will run until March 10. This will be followed by a 2 day low energy gold-gold run at less than 10 GeV center-of-mass, or 5 GeV per beam. This is well below the RHIC design parameters. This low energy region has received increased interest because of a possible anomaly observed at the CERN SPS.

Improper use of computers, which includes computer networks, will result in disciplinary action to the abuser. The accessing of a sexually explicit websites continues to be a problem at C-AD, as well as the rest of BNL. If you haven't heard the message before, let me remind you that the first instance will lead to a 2 week suspension without pay. A second instance will lead to an immediate dismissal. Let me also remind you that there are codes that monitor internet usage and flag the time spent at websites. Yes, there is Big Brother who watches this. See my all-hands slide presentation as to what is or is not acceptable usage.

Administration



At long last we have an FY 2008 budget. Although it reflects significant reductions, we will be able to maintain staff and include 6 weeks of polarized protons in the planned 19 week program. This is an ambitious endeavor with such limited resources and, so, it is important that C-AD personnel, once again, make every effort to control cost in the current year. Active recruitment for open personnel requisitions has ceased and budgets for overtime have been significantly reduced. AIP and capital spending plans have also been curtailed to ensure that we have sufficient operating funds.

The EBIS Project will also be impacted by FY 2008 funding reductions. Funding of \$2.4M, originally planned for FY 2007 and subsequently in FY 2008, is now reflected in our FY 2009 request. The impact on the project schedule is still uncertain.

Looking ahead, early information on the President's Budget indicate another lean year in FY 2009; however, funding to support 25 weeks of operations is planned. Assuming this budget passes the requisite hurdles, we should also be able to move forward with the personnel requisitions now on hold.

Success in Run-8 with IBS-suppression lattice and beta-squeeze: The story of a major achievement.

Recently, we saw spectacular increases in the RHIC's peak and average luminosity in deuteron-gold (d-Au) collisions, and in the luminosity's lifetime – an invigorating note on which to conclude this successful Run8 for the Department. Building on our solid foundation from previous runs, with invaluable contributions from all involved, we extended luminosity during this run well beyond previously attained heights. This article focuses on the specifics that guaranteed our achievement, describing interesting twists, and naming some special heroes.



The main ingredients of this major improvement were our implementations of the robust IBS-suppression lattice in the yellow ring, and the beta-star-squeeze in both rings. As the graph of integrated luminosity shows, the most exciting increases in luminosity followed our developing new RHIC lattices during APEX sessions and then establishing them operationally : Steps dAu80 to dAu81, and from

dAu81 to dAu82 dramatically improved our productivity.

These breathtaking steps did not come as a surprise; indeed, we anticipated them because of the multi-year efforts we had devoted to establishing three techniques of IR (Interaction Region) beta-squeeze, IBS-suppression lattice, and tune feedback. Several researchers pursued this work: Mei Bai, Don Bruno, Peter Cameron, Roger Connolly, Alfred Della Penna, Angelika Drees, Alexei Fedotov, George Ganetis, Lawrence Hoff, Wing Louie, Yun Luo, Nikolay Malitsky, Gregory Marr, Aljosa Marusic, Christoph Montag, Fulvia Pilat, Vadim Ptitsyn, Todd Satogata, Steve Tepikian, Dejan Trbojevic, and Nick Tsoupas.

Intra-beam scattering (IBS) is a natural process that causes the growth of the longitudinal (bunch length) and transverse sizes of beams and results in reduction of the luminosity. This effect is most severe for heavy ions, such as gold. The longitudinal stochastic electron cooling, developed by Mike Blaskiewicz and Mike Brennan during previous run, took care of the longitudinal IBS. We again employed it successfully during Run8 in the yellow ring used for the gold ions, while operating deuterons in the blue ring. In contrast to gold ions, IBS in the deuteron beam is very weak and only marginally affects the beam's parameters.

What was different during this latest run was that, for the first time in the history of RHIC operations, we introduced an experimental IBS suppression lattice that suppressed the transverse growth of the gold beam by 30%. Furthermore, this lattice ensured better transition crossing and a better re-bucketing, resulting in 10-15% more gold ions in the central RF bucket. Hence, not only did the lattice improve the luminosity's lifetime, but also heightened useful luminosity in the detector's vertex.

Still, the main advantage came from the fact that the slower growth of the transverse size of the gold beam entailed a huge 25% to 50% reduction of the yellow ring beta-stars in both the STAR and PHENIX detectors (dAu81), followed by similar reduction of the beta-stars in the blue ring. This so-

called beta-squeeze, a technique rigorously pursued by team led by Fulvia Pilat for about five years, raised luminosity by 25-50%.

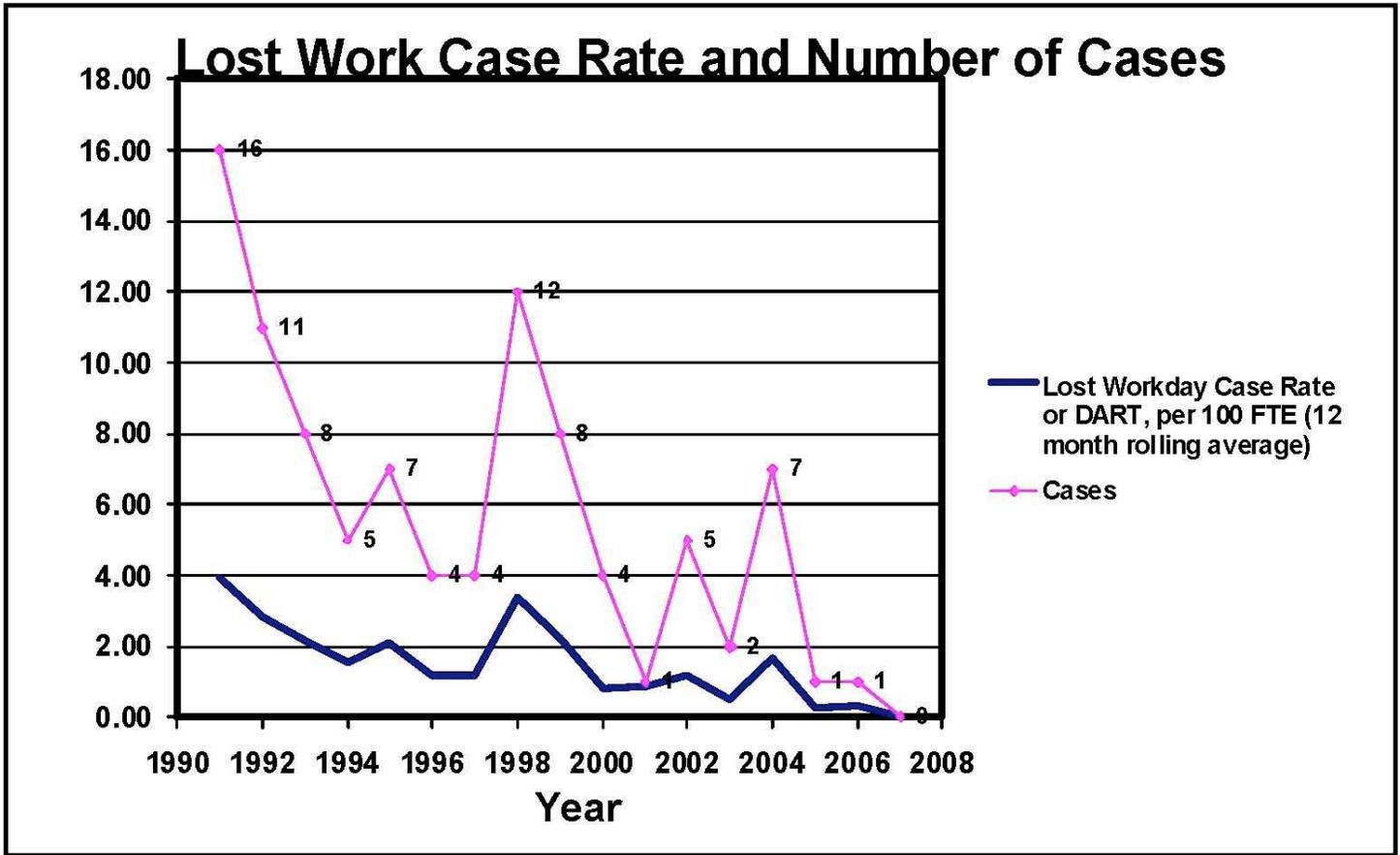
Our development of these lattices, and their rapid transition and incorporation into operations would have been impossible without our using the invaluable techniques of de-coupling and tune-feed back on the ramp that were developed by Peter Cameron, John Cupolo, Chris Degen, Craig Dawson Alfred Della Penna, Marek Gasior, Lawrence Hoff, Rhodri Jones, Martin Kesselman, Yun Luo, Aljosa Marusic, Joe Mead, Carl Schultheiss and Kurt Vetter.

All involved in these spectacular achievements deserve sincere congratulations; nevertheless, even against the stellar background of these remarkable teams, the contributions of some heroes, namely Yun Luo, Vadim Ptitsyn, Todd Satogata, and Steve Tepikian, warrant our especial thanks.

Vladimir Litvinenko, Accelerator Physics Group Head

Figure 1: Integrated luminosity as the function of the time exhibits two significant kicks directly related to implementing the dAu81 and dAu82 lattices with the corresponding beta-squeezes in the yellow- and the blue-rings.

Safety Stats



C-AD Occupational Injury Statistics

For Year* 2007 For Year* 2008

First Aid Cases	4	0
Recordable Cases	1	0
Lost Work Cases	0	0

* Calendar Year

REMINDER: TLD exchange is done the *FIRST FRIDAY* of the Month.

EXCHANGE DATE: FRIDAY, March 7, 2008

Pete Cirnigliario



RHIC Newsletter. Please click on link to the left to view the latest web publication of RHIC News.



*We wish all of you born in **February**
a happy and healthy year ahead.
Birthday people **ONLY** click on cake*



C-AD Service Awards January

30 years

Anh Pham

CONGRATULATIONS!



Get to Know Your CoWorker

Zeynep Altinbas, Controls Group - Hardware, has been at C-AD for 6 months. Still learning the operations of Power Supply Controllers (PSC) in order to become adept in all its functions; Zeynep is also writing a test procedure in LabView for PSC, as well as being involved in the safety project for ERL. Her current project is to design a Phase Lock Loop system for the event link fanout. Born and

raised in Istanbul, Turkey, Zeynep first came to the United States about 6 years ago as an exchange student. Later, she attended Stony Brook University where she earned a Bachelor's degree in Computer Engineering. This is her first job since graduating and she truly enjoys the work experience, as well as the familial work environment. Moreover, she is looking forward to continued professional growth at BNL. During her down time, Zeynep enjoys ballet, keeping up to date with information about performance cars, listening to various types of music, following baseball and basketball games, participating in various activities in the city, and travelling to new places.



Fun Time

Don't know how it was done, but it picked my number.....

<http://www.quizyourprofile.com/guessyournumber.swf>



Did You Know

Derek Lowenstein: A Passion for Science and Orchids

Monday, January 21, 2008

"I always had a plant on the window sill that I tended when I was growing up in Brooklyn," Derek Lowenstein, Chair of the Collider-Accelerator Department, said, explaining his interest in plants - and, in particular, orchids. "During the summer I also grew vegetables and flowers as part of the children's program at the Brooklyn Botanical Garden."

Later in Lowenstein's life, Herb Kinney, a BNL retiree, and his wife Betsy invited him to the summer auction of orchids given by the Suffolk Orchid Society, and, "after that, I was hooked," Lowenstein said.

For about 20 years, Lowenstein has been collecting and growing orchids, and today he has over 300 orchids in his collection. "I grow them under lights in my basement, and in the summer they all go out on my front porch," he said.

Lowenstein is currently vice president of the Suffolk Orchid Society, which meets at 7:30 p. m. every second Monday of the month at the Emma S. Clark Memorial Library in East Setauket.

Although orchids are sometimes considered rare and exotic, there are more than 20,000 species of orchids in the world, and orchids grow on every continent except Antarctica. Some varieties of orchids can be found growing wild in the woods of Long Island, but it is illegal to collect them. Lowenstein always has at least a few orchids in bloom in his collection, since different orchid species bloom at different times of the year.

"You need the appropriate amount of light and fertilizer for an orchid to thrive and most importantly to bloom," Lowenstein explained. "Most orchids in the wild are attached to trees or rocks, and for the most part do not grow in direct sunlight. They receive nutrients from the minerals and organic matter in the rain runoff. So, when growing orchids, keep them away from direct sunlight (there are some exceptions), and water and feed them both weekly and weakly. They don't like to have wet feet. Again, there are some exceptions, but don't allow them to stand in water. I think most home-grown orchids die due to poor watering practices."

Lowenstein has created two new orchid hybrids, which he has registered with the Royal Horticultural Society, an organization that maintains the database of orchid hybrids and species, recording about 3,000 new hybrids a year. Lowenstein's hybrids are named "Elaine Lowenstein," after his wife, who works in BNL's Community Relations Office, and "Alexander Leif," after his grandson. Since the hybrids are still little seedlings, it's too soon to tell what they will look like when mature, but hybrids are often more beautiful and vigorous than the two plants from which they originated.

When asked, it's hard for Lowenstein to choose his favorite orchid because they are all so different. But after some thought, he said he is partial to the Paphiopedilum, or Lady Slippers, an orchid genus that has "cousins" that grow on Long Island but is mostly often found in Southeast Asia.

Looking at photos of his orchid collection on his computer, he has one final thought about orchid growing. "It's a socially acceptable addiction," he said.

2008-458 | Media & Communications Office

Sorin Viorel Badea received an Employee Award for Engineering. Candidates

**are selected for the exceptional nature and difficulty level of their contributions, as well as the benefit of the contributions to the Laboratory.
CONGRATULATIONS!**

Brookhaven National Laboratory is issuing the following news release today.

number: 08-05

For release: January 8, 2008

contact: Diane Greenberg, 631 344-2347, greenb@bnl.gov, or

Mona S. Rowe, 631 344-5056, mrowe@bnl.gov

Long Island Weather of 2007: Strong Northeasters, a Tornado, Low Snowfall

UPTON, NY -Unusual weather events characterized 2007 both around the world and on Long Island. For example, England had the warmest April in 348 years of record-keeping; South Africa had its first significant snowfall in 25 years; nearly 155 inches of rain fell in three days on Reunion Island, 400 miles east of Africa; a cyclone ripped through Oman and Iran; and, on Long Island, a tornado tore up trees in Islip Terrace.

The tornado hit Islip Terrace on July 18, a very unusual occurrence for Long Island. At Brookhaven Lab, the emergency operations center was activated on that date, as meteorologists tracked the tornado, which they had feared might strike the Laboratory. Again on August 8, a tornado touched down in Brooklyn, another rare event, while three-quarters of an inch of rain fell at Upton.

At Brookhaven Lab, where meteorologists have been keeping weather records since 1949, the average yearly temperature for the area in 2007 was 51.7 degrees Fahrenheit (F). While that temperature was slightly above normal, it did not nearly reach the record-breaking yearly temperature of 53.2 degrees F, in 2006.

With total precipitation of 45.33 inches, 2007 was a dry year, in contrast to 2006, which brought 61.59 inches of precipitation. But three strong northeasters brought icy roads and torrents of rain to Long Island in 2007. On memorable Valentine's Day, a strong northeaster hit Long Island causing treacherous driving. The north shore was hit the hardest with three to four inches of snow. Another northeaster brought two inches of rain and wind gusts of up to 45 miles per hour to Long Island on April 15 and 16, while a northeaster on December 15 and 16 brought snow and sleet and 60-mile-per-hour wind gusts to the area.

Snowfall in the 2006-2007 winter season was 9.5 inches, well below the 31.2 inches of yearly average snowfall for Long Island, and about ten times less than the record high snowfall of 90.8 inches set in the 1995-1996 snow season.

Four new daily highs and one daily low temperature were set in 2007. On January 6, the thermometer hit 64

degree F, beating the record of 56 degrees F, set in 1950, and January 7 brought a high temperature of 55 degrees F, one-half degree higher than the record set in 1995. On May 25, a high of 91.5 degrees F was also one-half degree higher than the record set in 1991. October 8 brought a new high of 88.5 F, besting the record of 77 degrees F set in 1990. The new low was set on June 24, when the temperature dropped to 43.5 degrees F, one degree lower than the record set in 1988.

One of ten national laboratories overseen and primarily funded by the Office of Science of the U.S. Department of Energy (DOE), Brookhaven National Laboratory conducts research in the physical, biomedical, and environmental sciences, as well as in energy technologies and national security. Brookhaven Lab also builds and operates major scientific facilities available to university, industry and government researchers. Brookhaven is operated and managed for DOE's Office of Science by Brookhaven Science Associates, a limited-liability company founded by the Research Foundation of State University of New York on behalf of Stony Brook University, the largest academic user of Laboratory facilities, and Battelle, a nonprofit, applied science and technology organization. Visit Brookhaven Lab's electronic newsroom for links, news archives, graphics, and more: <http://www.bnl.gov/newsroom>

----- **What The World Eats** - Very Interesting

Germany : The Melander family of Bargteheide



Food expenditure for one week : 375.39 Euros or \$500.07

Favorite foods : fried potatoes with onions, bacon and herring, fried noodles with eggs and cheese, pizza, vanilla pudding

United States : The Revis family of North Carolina



Food expenditure for one week : \$341.98

Favorite foods : spaghetti, potatoes, sesame chicken

**Japan : The Ukita family of
Kodaira City**



**Food expenditure for one week :
37,699 Yen or \$317.25**

**Favorite foods : sashimi, fruit, c
ake, potato chips**

Italy : The Manzo family of Sicily



**Food expenditure for one week :
214.36 Euros or \$260.11**

**Favorite foods: fish, pasta with
ragu, hot dogs, frozen fish sticks**

**Great Britain : The Bainton
family of Cllingbourne Ducis**



**Food expenditure for one week :
155.54 British Pounds or \$253.15**

**Favorite foods : avocado,
mayonnaise sandwich, prawn
cocktail, chocolate fudge cake
with cream.**

Kuwait : The Al Haggan family

of Kuwait City



**Food expenditure for one week :
63.63 dinar or \$221.45**

**Family recipe : Chicken biryani
with basmati rice**

**Mexico : The Casales family of
Cuernavaca**



**Food expenditure for one week :
1,862.78 Mexican Pesos or
\$189.09**

**Favorite foods : pizza, crab,
pasta, chicken**

China : The Dong family of

Beijing



Food expenditure for one week : 1,233.76 Yuan or \$155.06
Favorite foods: fried shredded pork with sweet and sour sauce

Poland : The Sobczynscy family of Konstancin-Jeziorna



Food expenditure for one week : 582.48 Zlotys or \$151.27
Family recipe : Pig's knuckles with carrots, celery and parsnips

**United States : The Caven
family of California**



**Food expenditure for one
week : \$159.18**

**Favoit foods : beef stew, berry
yogurt sundae, clam chowder,
ice cream**

**Egypt : The Ahmed family of
Cairo**



**Food expenditure for one
week : 387.85 Egyptian Pounds
or \$68.53**

Family recipe : Okra and mutton

**Mongolia : The Batsuuri family
of Ulaanbaatar**



**Food expenditure for one week :
41,985.85 togrogs or \$40.02
Family recipe : Mutton dumplings**

**Ecuador : The Ayme family of
Tingo**



**Food expenditure for one week :
\$31.55
Family recipe : Potato soup with
cabbage**

***Bhutan : The Namgay family of
Shingkhey Village***



***Food expenditure for one
week : 224.93 ngultrum or \$5.03
Family recipe: Mushroom,
cheese and pork***

***Chad : The Aboubakar family of
Breidjing Camp***



***Food expenditure for one
week : 685 CFA Francs or \$1.23
Favorite foods : soup with fresh***

sheep meat

From: Carter, Christine B
Sent: Tuesday, February 05, 2008 8:29 AM
Subject: BERA Update for the Week of February 4, 2008. Please POST & Pass on

Good morning all,

~BERA Elections will be taking place in March! It's very important to participate in these elections as each candidate has their own view regarding BERA trips & events!
www.bnl.gov/bera

~Join the BERA Body Building Club & have use of the weight room! \$25 per year!
Check out all **fitness opportunities** at: <http://www.bnl.gov/bera/recreation/fitness.asp>

~Just a few **Knicks tickets** remain for this Friday's trip to Madison Square Garden!

~Trips & events now on sale now at the BERA Store:

NY International Art Show & Exhibit

Sunday March 2, 2008

Tickets are \$20 per person for the Art Show at the Jacob Javits Center. The coach bus (55 seats) will depart Brookhaven Center at 9:30am and leave NYC at 5pm. [more info...](#)

Philadelphia Flower Show



Sunday, March 9, 2008

Coach bus (56 seats) leaves Brookhaven Center at 6am and departs PA at 5pm. Cost is \$30 per person. Nearby attractions to the Pennsylvania Convention Center include Terminal Market, The Liberty Bell, Chinatown and more. <http://www.theflowershow.com/home/index.html>

RINGLING BROTHERS & BARNUM & BAILEY CIRCUS!

Saturday, March 29, 2008

We have 40 tickets only for sale at \$36 per person (adult or child) for Section 108/109. Tickets are for 11am show at Madison Square Garden. The coach bus will leave Brookhaven Center at 9am and leave MSG at 4pm. [To view seating at MSG](#)

BERA Bus Trip to NY City- drop off & pick up at Bryant Park

Saturday, April 12, 2008

The coach bus will leave Brookhaven Center at 9am and leave NYC Bryant Park area at 5pm. There will be 2 busses going for this "*do as you please*" trip. The cost is \$10 per person (adult or child).

Captain Bob's Charter

Saturday, May 17, 2008

Be at the dock by 7:45am, returning at 3:00pm, \$60 per person - No bus transportation provided. Advance registration and payment is required at the BERA Store, Monday-Friday between 9:00am-3:00pm. <http://www.captbobfishingfleet.com/boats1.cfm>

Christine B. Carter, CMP ccarter@bnl.gov www.bnl.gov/bera

THE CHARLES B. WANG CENTER
AT STONY BROOK UNIVERSITY

IN CELEBRATION OF THE CHINESE YEAR OF THE RAT
PRESENTS

AN INTERNATIONALLY ACCLAIMED ENSEMBLE FROM TAIWAN



Chai Found Music Workshop

*BOLDLY BRIDGING THE GAP BETWEEN EASTERN & WESTERN CULTURES AND
TRADITIONAL & CONTEMPORARY MUSIC*

FRIDAY, FEBRUARY 22, 2008
8:00PM

ADMISSION: \$10 STUDENTS \$15 GENERAL ADMISSION
\$25 VIP SPONSORSHIPS - PRIORITY AND RESERVED SEATING
631.632.4400 or 631.543.5768

* Brought to you in collaboration with Zen Appétit *



ALUMNI NEWS: AGS/RHIC/C-AD RETIRED CROWD - We'd enjoy hearing from you and what you have been up to. Please send your notes to pmanning@bnl.gov

You can catch up on all of Eric Forsyth's travels by clicking on his sailing yacht below.



February 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 Groundhog's Day
3	4	5	6	7	8	9

<p>10</p>	<p>11</p>	<p>12</p> <p>BSA Noon Recital: "Henry Purcell's DIDO and AENEAS", 12noon, Berkner</p> <p>Physics Colloquium "Nuclear Physics and The New Standard Model", M. Ramsey- Musolf, U. of WI-Madison, 3:30pm, Bldg. 510 Large Seminar Rm</p>	<p>13</p>	<p>14</p> <p>BNL Blood Drive</p> 	<p>15</p> <p>C-AD AP Seminar "Tomographic measurement of the phase- space distribution of a space- charge- dominated beam", D. Stratakis, U. of MD, 4pm, Bldg. 911B LCR</p>	<p>16</p>
<p>17</p>	<p>18</p>  <p>Holiday</p>	<p>19</p> <p>Health Promotion Lecture "Medicaid Eligibility", N. Burner, Esq., 12 noon, Berkner Rm B</p> <p>Physics Colloquium "Developments in charm quark mesons: chaos, confusion and craziness", T. Barnes, 3:30pm, Bldg. 510</p>	<p>20</p> <p>433rd Brookhaven Lecture, Jason Graetz, ES&T, 4pm, Berkner Auditorium</p>	<p>21</p>	<p>22</p> <p>Chai Found Music Workshop, 8pm</p>	<p>23</p>

24	25	26	27	28	29	
	<p>Health Promotion Program Lecture "MRSA: Facts and Fiction", H. Chaudhry, Commissioner of the SCDHS, 12noon Berkner</p>			<p>Goldhaber Symposium, Hosted by L. Newman, 1:30pm, Bldg. 555 Hamilton Seminar</p>		



March 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	<p>Eric Forsyth's Sailing Trip to Antarctica, 12noon, Berkner</p> <p>Physics Colloquium "Progress and challenges in the physics of nuclei", D. Dean, ORNL, 3:30pm, Bldg. 510</p>	5	6	7	8
9	10	11	12	13	14	15
<p>Daylight Saving Time Ends</p>		<p>Health Promotion Lecture "Paying for Long-Term Care: Understanding your Options", C. Russell, Cornell U., 12noon,</p>	<p>BSA Distinguished Lecture "Climate Change: Prospects for Nature", T. Lovejoy, Heinz Center, 4pm, Berkner</p>			

		Berkner Rm B				
16	17	18	19	20	21	22
	Saint Patrick's		434th Brookhaven Lecture "E. O'Brien, PO, 4pm, Berkner	First Day of Spring		
23	24	25	26	27	28	29
Easter						
30	31					



We Remember
Sept. 11, 2001

Editor: Pamela Manning x4072