

Contact: [C. Scholl](#)

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April 2013

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Quote of the Month: "Research is what I'm doing when I don't know what I'm doing." - Wernher von Braun

A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

▶ Arrivals/Departures

 Safety Stats



NOTE FROM OUR CHAIR: Thomas Roser

With the budgets now reasonably stable for the rest of the fiscal year we decided to extend this year's RHIC run by two weeks until June 7. The performance of RHIC has been outstanding so far, particularly for the last week.

For this run a completely new optically pumped polarized ion source (OPPIS) was built by Anatoli Zelenski and his team. This new source injects an extremely intense neutral atomic hydrogen beam into the magnetic field of a superconducting solenoid where the hydrogen atom is stripped of its electron and picks up a polarized electron from rubidium vapor that itself was polarized with a laser. On the way out of the solenoid field the polarization is transferred to the proton of the hydrogen atom and finally an additional electron is added when the beam passes through a jet of sodium gas. This extremely complicated process is working flawlessly and the performance of the new source has now exceeded the performance of the previous source. Congratulations to Anatoli and his team.

CONFERENCE PROJECTIONS DUE: DUE MAY 13TH

DID YOU KNOW??

Steve Bellavia has a hobby of taking astronomy photos? Take a look at some of the photos he took [of the galaxy and a comet](#).

Check out who received an employee Service Award this year! 2013 Collider~Accelerator Dept. employees who received a Service Award are listed [here](#). Last Years Service Awards are listed [here](#).

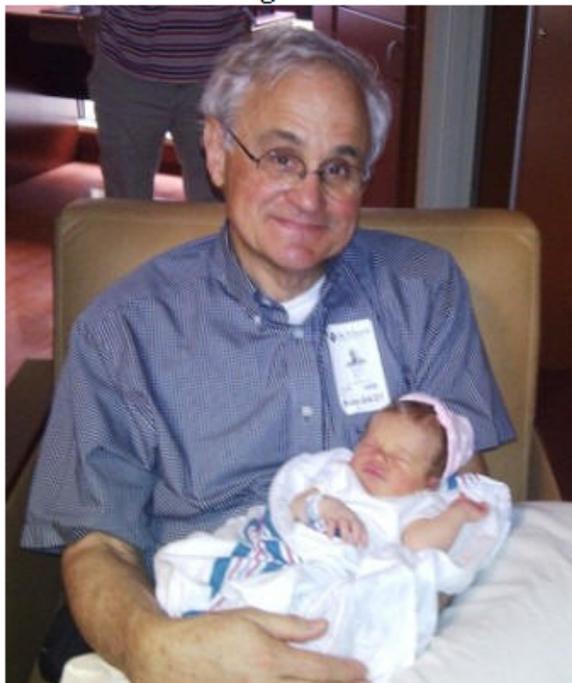
Check out some old photos! Employees shared some of their historical pictures of the lab, [check them out!](#)

The C-AD BBQ has been announced to be on July 10th! ?

Did you know it was Ernest Courant's 93rd Birthday, April 10th? Happy Birthday Ernest!!!

Phil Pile is once again a Proud Grandfather!!

Her name is Sophia Antoinette Fiocchi and she was born April 19th.
This is his 1st Granddaughter! CONGRATULATIONS!



EVENTS/SEMINARS...



Check out the [BNL Calendar](#) for upcoming events & Seminars or the [Upcoming Conferences & Workshops](#) page for workshops and Conferences happening at BNL.

May 3 ~ (Berkner Hall | 9:00) Brookhaven Forum 2013, "Exploring Fundamental Interactions in the Higgs Era" Hosted by Amarjit Soni

May 3 ~ (Bldg 510 | 2:00) Nuclear Physics & RIKEN Theory Seminar, "Lattice QCD in rotating frames" Presented by Yuji Hirono

May 7 ~ (Bldg 510 | 3:30) Physics Colloquium, "TBD" Presented by Samuel Ting (MIT)

May 8 ~ (Berkner Hall [B] | 8:30) Workshop on Radiation Safety, "RADSYNCH 2013" Presented by Panakkal Job

May 9 ~ (Berkner Hall [B] | 8:30) 7th Inter. Workshop on Radiation Safety, "RADSYNCH 2013" Presented by Panakkal Job

May 10 ~ (Berkner Hall [B] | 8:30) 7th Inter. Workshop on Radiation Safety, "RADSYNCH 2013" Presented by Panakkal Job

May 10 ~ (Bldg 510 | 2:30) Brookhaven Sphere Seminar, "Detection of Cyber-Attacks Utilizing Behavioral Semantics" Hosted by ITD ~ Presented by Victor Skormin (BU)

May 29 ~ (Bldg TBA | 4:00) J-PARC Seminar, "Status of the J-PARC Muon Facility & Future" Presented by Prof. Tasuhiro Miyake (KEK)

****JUNE 25~28** ~ (Berkner Hall) 2013 RHIC & AGS Annual Users' Meeting ~ "Accelerator Discovery: A Collider for Hot Science".**

REGISTRATION DEADLINE: JUNE 21

For more information please visit <http://www.bnl.gov/aum2013>.



Guillaume Robert-Demolaize is One Proud Dad!!

He had his new baby girl on March 30th! CONGRATULATIONS!!
Her name is Chloe and can you believe it she is already 1 month!



WHAT'S GOING ON IN OUR NEIGHBORHOOD?

Interested in Cycling? Why don't join in on the [Bike Expo](#), [TD Five Boro Bike Tour](#), [Grand Fondo](#) in NYC, [American Heart Ride](#) in the Hamptons, [Ride to Montauk](#) starting in Babylon and the [2nd Annual Rockaway Bike Parade](#)! Do you like Racing? If you do you should check out the [Grant's Tomb Criterium](#)! Some upcoming cycling events in June are the [Tour de Cure](#) at the Pindar Vinyards and the [Bike MS: Traffic Free Ride at Bethpage State Park](#).

Interested in Running or Walking? Check out the [lirunning April Calendar](#) for the following events: LI Marathon Weekend 5k, River Run 5k, Run for Health 5k, Greenbelt Trail 25k & 50k, The Bench 5k, LIRRC Wed Night Summer Series, Hampton Bays Pride Day 5k, Miles for Melonoma 5k Run/Walk, etc..

IN OTHER NEWS...

Chandra X-Ray Observatory ~ Scientists have used Chandra to make a detailed study of an enormous cloud of hot gas enveloping two large, colliding galaxies... [Read more](#)

New LED Streetlight Design Curbs Light Pollution~ [Read](#) about these new lighting systems (developed by researchers in Taiwan & Mexico) have been harnessed in order to spare unwanted pollution.

Clean Marinas May get State Aid ~ In Hartford nearly 50 Environmentally friendly marinas would become eligible for state support dredging projects under a bill approved by committee Tuesday. [Read more..](#)

Check out MSN's ~ [May Day Fun Facts](#), Did you know May 1st is recognized by some as honor of spring and others in recognition of workers?

DAY AT THE VINEYARDS...

Macari Vineyard ~ [MATTITUCK] May 18 ~ Vines & Branches ~ Complimentary Olive Oil & Balsamic Vinegar Tasting

Duckwalk North ~ [SOUTHOLD] No Events Posted
Duckwalk South ~ [WATER MILL] May 12 (12-2) ~ Mothers Day Brunch \$39.95 pp

Castello di Borghese Vineyard & Winery ~ [CUTCHOGUE] ** Vineyard Tours & Wine Tastings Every Saturday @1pm & FREE Jazz Every Saturday (2-4) with Marguerite Volonts** May 4 (6:30-9:30) An Evening of Opera; May 6-21 & Book Signing May 9 (2-5)"Captured McGraphics; May 11 & (June 23) (2-4pm) Olive Oil Showdown & Tasting



Hofstra University 30th Annual Dutch Spring Music Festival! The Dutch Festival Celebrates the Dutch culture with Kids Activities, Music, Food and Annual Plant Sale. Sunday, May 5, 2013 From 11 A.m. To 5 P.M., At The South Campus.. ([Click Here](#) for more info)

For the Kids. American Idol (August) @ [The Nassau Coliseum](#).

May 4- Nassau Coliseum the [Pet Expo!](#)



Meet over 100 breeds & Learn About Pet Care, Volunteerism, Grooming, Pet Behavior & Training, Traveling with your Pet, How YOU Can Make a Difference, Different Types of Pets/Breeds, Veterinarian FAQ, Fun Activities for You & Your Pet.

Jamesport Vineyards - No Events Posted

Martha Clara Vineyards - [RIVERHEAD] April 3- June 12(7-9pm) Wine & Photography; MAY 4 -FREE- (1-5) Music with The Sugar & Spice Soul Band May 5 -FREE- (1-4) Cinco de Mayo; May 10 (7:45) Comedy Festival; May 11 (12:30-4:30) Live Music: new Life Crisis; May 12 (1-5) Mothers Day ~ Karaoke w/ DJ Phil; May 18 (2-6) Live Music: Playn & Symple; May 19 (1-4) Live Music: Hart & Soul; May 25 (9-4) Car Show * (2-6) Live Music: Bobby Nathan Band; May 26 (1-5) Live Music: Suffolk Horns; May 27 Memorial Day (10am) Vines & Canines (2-5) Live Music: Keith Maguire. Upcoming in (JUNE) 1 (1-5) Live Music: Six Gun; (JUNE) 2 (1-5) Live Music: Hart & Soul..

Palmer Vineyards - [RIVERHEAD] *Courttyard Reservations available 5/18 8/31* May 12 (11-5) ~ Mothers Day (Glass of wine w/ Guided Tour) **Coming in June** Yoga in the Vines

Pindar Vineyards - [PECONIC] May 4 & 18 (1-5) ~ Live Music: Grant Werner; May 11 (1-5) ~ Live Music: Mark Eisemann; May 12 (11-5:30) ~ Mothers Day Comp. Gift; May 25 & 26 (1-5) Live Music: Tommy Sullivan!

Baiting Hollow Farm Vineyard ~ [CALVERTON] *Music every Sat & Sun from (2-6pm)* May4: Acoustic Soul; **May 5: Top Cat**; May 11: Old School; May 12: Denise Given & Conrad Taylor **Out Door Season Officially Opens May 18th!** May 18: Ricky Roche; May 19th: F&G Band; May25; Top Cat; May 26: Acoustic Soul; May 27: Memorial Day (Old School); May 31 (6-9) Benifit for Horses featuring Southbound \$60pp; (June) 1: Southbound w/ BBQ & **FREE** Line Dancing Instruction; (June) 2: Denise Given Band; (June) 8: Tommy Keys & Ricky Roche; (June) 9: Tommy Keys; June 15: The Smoking Gun; (June) 16: F&G Band

Paumanok Vineyards ~ [AQUEBOGUE] May 17 (6:30) ~ Wine Dinner at the North Fork Table & Inn \$110 pp

NOTE FROM OUR ADMINISTRATION: Stephanie LaMontagne-McKeon



Despite budget uncertainties, RHIC Run 13 began on February 11 as planned and continues. The impact of sequestration on our operating budget is not yet known but based on “educated assumptions”, the Nuclear Physics Program Office has requested a number of budget analyses all of which support, some with more difficulty than others, a 15+ week run in the current year.

I believe we have managed quite well under the circumstances. We have limited hiring and controlled large material expenditures. Luck, too, is working with us in the form of lower than projected power cost. In summary, we are well positioned to sustain the budget cuts we have modeled. An extension of Run 13 beyond 15 weeks may even be possible.

On an administrative note, the annual inventory of Special Process Spares will commence shortly. Special process spares are by definition unique to the facility, vital to ensure continuity of operations and require a long lead-time to manufacture and deliver. The RHIC spares inventory is an active inventory of ~500 items valued at ~\$14M. The status of each spare must be confirmed annually and payment processed for any spare put into service since the completion of the prior year’s inventory. Paul Sparrow is responsible for maintaining the SPS inventory records. If you have special process spares for which you are responsible, you will receive a request in May to confirm the status of the spares. Please make every effort to respond as soon as possible.

NOTE FROM OUR ACCELERATOR DIVISION: Wolfram Fischer



After initial problems with low availability and polarization the RHIC Run-13 is now in good shape. By now record peak and average luminosities were demonstrated, which also have good polarization. Among the recent improvements are an increasing source performance, a bunch-by-bunch longitudinal feedback at injection and on the energy ramp, and a careful parameter selection to maintain small emittances on the ramp. Vahid Ranjbar, the Run Coordinator, has more ideas and we may get even better performance before the polarized proton part of the Run ends. Still under discussion for this year is a possible short run of Au-Au a little below the nominal injection energy, to fill in a missing point in the energy scan performed in 2010.

The experiments are preparing their beam use proposal for the next two years. While a number of options are discussed, we are likely to run Au-Au at 100 GeV/nucleon next year, as well as 100 GeV polarized protons. For Run-15 p-Au collisions are likely, and possibly other asymmetric combinations. For this we will need to move the DX magnets by about 1cm, something we need to test at the end of the current run. The NSRL run continues until 10 May with Si, He, and protons in the remaining time.

The catalog of all Technical Notes is <http://www.rhichome.bnl.gov/AGS/InternalReports.html>, and it is linked from both the Department and Accelerator Division home pages.

NOTE FROM OUR EXPERIMENTAL SUPPORT & FACILITIES DIVISION: Phil Pile



As was the case this time last month we still do not yet have a final budget from DOE. Our plan is to extend the run from the minimum 15 weeks to 17 weeks based on present DOE guidance and an anticipated power rebate due to favorable power rates for the year to date. The hope for a 20 week run is fading fast! The STAR and PHENIX experiments are now into their eighth week of data taking for Run 13. Record peak luminosities have been achieved and RHIC time at store and polarization performance has now turned the corner, in fact since Tuesday a week ago the polarization as measured by the jet target has averaged 58% and 57% in the yellow and blue beams respectively! Furthermore, the time at store for the week of 4/21 through 4/27 was 111 hours, another record for the run. If we keep this up the STAR experiment will reach its goals early and PHENIX will not be too far from its goals by the end of the run. Berndt Mueller has decided to forgo a short heavy ion run this year in favor of accumulating more 205 x 205 GeV pp integrated luminosity. With this the hope is to have a definitive data set to complete the W physics program. Seventeen cryo weeks takes us to 10 June so the warm-up will begin on 7 June.

Preparations to move the g-2 experiment to FNAL continue. Most of the muon beam line components have been shipped to FNAL as of the end of last month. Beginning this week we will begin shipments to FNAL, part of the muon storage ring magnet steel that has to be removed to allow access to the cryostats housing the superconducting coils. In fact the first shipment arrived at Fermi Lab today. If all goes according to plan the 50 foot diameter coil/cryostat assemblies will be shipped in June. There is a lot of activity at the lab Directorate level concerning the superconducting coil shipment as this will be a high profile shipment that will impact the flow of traffic on William Floyd (as well as the lab)

when the actual move takes place.

NSRL Run 13A for NASA began on 18 March and will continue through 10 May. Run 13A will be followed by Run 13B, presently scheduled to begin on 29 May and continue until 28 June..

BLIP has been running since 17 December and will continue through July.

NOTE FROM OPERATIONS: Paul Sampson



With the run in full production mode, stable high polarization stores are routinely delivering good luminosity to the RHIC experiments. Development and tuning continue to improve machine conditions while upgrades, installation, testing and commissioning of e-lens and other projects are proceeding where possible.

Recently, ramping of several of the warm solenoids associated with the Blue and Yellow e-lens was incorporated into the standard RHIC ramp. This will serve as dry run for the devices and will continue for the balance of Run 13. Major work and testing of other e-lens components continues on maintenance days and other down periods.

In the AGS, the first beam signals on the newly installed e-IPM have been observed as work on hardware and software continues. Access for repair and continued installation in the AGS has been possible behind long RHIC stores, which is helping to ease the workload on scheduled maintenance.

The LINAC, Booster and AGS continue their reliable operation and are providing high polarization beams for injection into RHIC. At

present, average polarization at full energy in AGS is just under 70%. This can be attributed to improvements at the OPPIS source as well as gains in the injectors themselves. NSRL run 13A continues to run smoothly with beams from the EBIS source. Run 13B will begin on May 29th. Preparation for possible Au or He running has begun and continues behind stores and on alternate user cycles.

Preliminary plans for the upcoming shutdown are being finalized and include final installation of the e-lens as well as work on the 56MHz RF, CeC and other projects.

To view a list of the approved work for maintenance days or the shutdown, go the [Job Request System](#) and select the appropriate date. This link is behind the firewall and requires privileges to view.

For schedule updates see: [This Week, which can be viewed by all.](#)

NOTE FROM ACCELERATOR R&D DIVISION: Ilan Ben-Zvi



Commissioning of the ERL SRF gun was interrupted to fix a leak to the cryostat insulation vacuum at one of the cryogenic feed throughs. The leak was fixed and four other connections were retrofitted to avoid this kind of leaks in the future. In the mean time we continue preparations to install a copper cathode in mid-May. This cathode will not produce any beam, but will allow us to study/condition potential multipacting barriers in the cathode choke region as well as commission the cathode insertion system. The 5-cell cavity was cooled down for the first time with the ERL cryogenic system. One cold emission test (CET) was performed and allowed us to re-commission the digital LLRF system, confirm that we can operate this cavity stably at 11 MV/m in CW mode and at 20 MV/m in a long-pulse (up to 350 ms), low repetition rate mode. More tests are planned for May/June. The Phase I of the large grain cavity test was complete at small vertical test facility (SVTF). The cavity reached accelerating voltage of ~ 1 MV. The cavity was removed from SVTF and is now in the building 905 clean room, where it will be prepared for the Phase II test (with a cathode insert).

Work on the 56 MHz SRF cavity for RHIC is proceeding according to schedule. Assembly of the VTF top plate insert has been complete in the Mezzanine clean room. Currently the cavity is in the Mezzanine class 100 clean room, where it is being fitted to the VTF top plate for the first acceptance test.

The large Vertical Test Facility (VTF) is ready for the first acceptance test of the 56 MHz cavity.

The 112 MHz SRF gun for the Coherent Electron Cooling proof-of-principle experiment has been delivered from Niowave to BNL. After installation of some ancillary components, it will be moved into IP2 area in the RHIC tunnel for installation. The 5-cell BNL3-1 cavity is at AES for final BCP, HPR and clean assembly prior to its first acceptance test in VTF. The BNL3-2 cavity will soon be shipped from Niowave to BNL for 600C vacuum bake.

Muon Acceleration Group:

Work has begun for entering the world of high-performance computing at the NERSC (National Energy Research Scientific Computing) facility at Berkeley. This holds the promise of greatly expanding our design and simulations effort of the group. The NERSC facility features multi-core (153K cores available) processing. We've been calculating the nonlinear effect of large transverse amplitudes on longitudinal dynamics for analyzing results from the EMMA FFAG experiment. This effect is also important for neutrino factory beam dynamics. We are analyzing and simulating a new type of 6-D ionization cooling channel (6-D: cooling longitudinally and transversely) which, instead of bending in a circle to generating longitudinal-transverse coupling, has a generally straight geometry with gentler bending back and forth.

LARP Group:

The crab cavity project in the LARP group is moving along within expected schedule. The Proof of Principle crab cavity has finished the chemical cleaning, high temperature baking, and high pressure rinsing cycle in March. It has arrived at BNL early this month for vertical test in 2 K liquid helium. The cold test will be conducted in the SVTF in the 28" dewar. It will use the same top plate, motion linkage, and RF connection as the 704 MHz large grain gun in its previous tests. New couplers and adapters are all fabricated and cleaned for the crab cavity, and the cavity-top plate installation in the class room 100 is under way. The cool down of the dewar will be ready within three weeks. Progress of this POP crab cavity was reported in the LARP CM20/Hi-Lumi Meeting in early April. The cavity cold testing attracted broad interests from collaborators. After the testing of the POP cavity, the project will move on to design and fabrication of two prototype crab cavities for a test with beam in SPS at CERN.

ATF Group:

The ATF is running its scheduled user program and preparing a large-scale upgrade proposal, called the ATF II proposal. The most important element of the upgrade program is the move of the ATF to building 912, in the area that has the ERL and SRF cavity preparation and testing infrastructure.

In the users program, Experiment AE50 - Plasma Wakefields in the Quasi-Nonlinear Regime was installed and first run carried out with demonstration of sharp e-beam focusing by mini-quad triplet. The beam was observed on a phosphor screen is below the resolution of this device. Next run will use the Optical Transition Radiation imaging system. Single-electron detection user experiment (Princeton-BNL) collected some statistics. Another run is planned tentatively for July.

In the laser-driven ion acceleration experiment, laser shots on a hydrogen gas jet provided plenty of time-resolved plasma images (shadow-grams and interferometry). They show that the produced plasma is not as dense as required for ion acceleration. Different solutions are considered, including changing a nozzle or laser beam parameters.

ARRIVALS: Welcome!

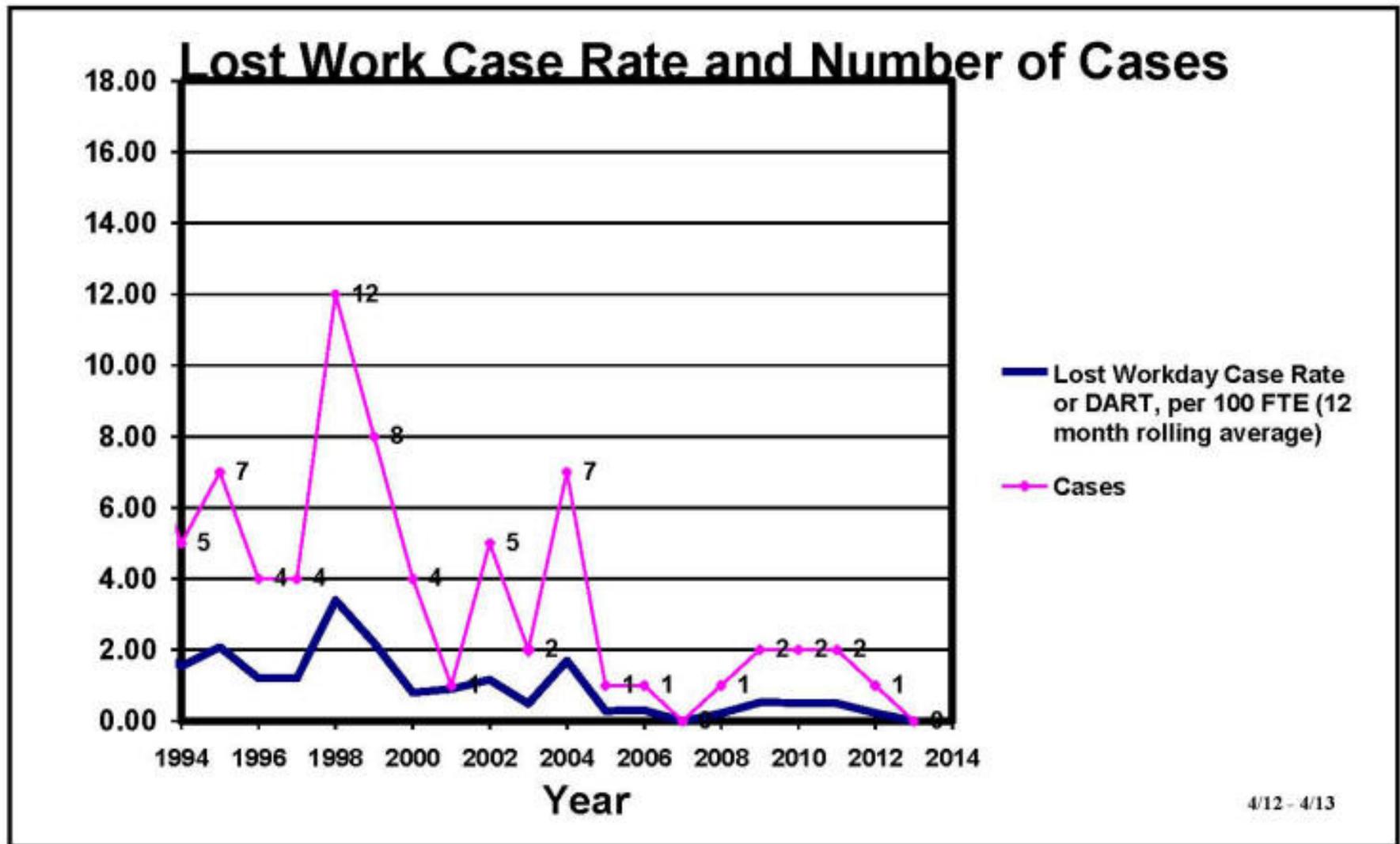
Xiaozhe Shen (Collaborator/Accelerator Physics Group) Will be working with Mei Bai until June 8th, 2013

DEPARTURES: Farewell, you will surely be missed..

Paul Goergen, (Collaborator/Accelerator Div.) - Last Day was April 30, 2013

Shigang (Scott) Yuan, (RF Engineering) - Last Day was April 30, 2013

SAFETY STATS: Peter Cirnigliaro



C-AD Occupational Injury Statistics

For Year 2012 For Year* 2013

First Aid Cases	5	1
Recordable Cases	3	0
Lost Work Cases	0	0

* Calendar Year through 4/13

PHOTOS BY: STEVE BELLAVIA

Steve took these photos Thursday, April 4th at 4:30 in the morning. He took these photos on his Canon EOS T3, a zoom lens and a finder scope jury rigged to the tripod, in order to find the comet and the galaxy.

Andromeda Galaxy (M31) and Comet Pan-STARRS (C/2011-L4)





Canon EOS T3
2.5 second exposures at ISO 6400
Vivitar Lens 100mm-400mm zoom, set at 278mm (f/5.6)
Orion 6x30 finder scope (see attached rig photo)
Alt-Az tripod
146 light frames, reduced to 116 (best 80%)
12 dark frames, 12 bias frames, 1 flat frame
Registered and stacked with Deep Sky Dacker 3.3.2