

PREVIOUS ISSUES

March 2015

Contact: [C. Hoffman](#)

[{HOME PAGE}](#)

[BNL WEBSITE](#)

[C-AD WEBSITE](#)

[ES&F WEBSITE](#)

[BERA](#)

[BNL CLASSIFIED ADS](#)

## A WORD FROM THE:

Administration

Accelerator Div.

ES&F Div.

Acc. R&D Div.

Operations

▶ Arrivals/Departures

 Safety Stats

Quote of the Month: "Only two things are infinite, the universe and human stupidity, and I'm not sure about the former" - Albert Einstein

### NOTE FROM OUR CHAIR: Thomas Roser



The performance of RHIC during this year's run is again setting new luminosity records. With the new electron lenses the polarized proton beams can now tolerate a larger beam-beam force when they collide with each other. This is the first time that proton-proton collisions were successfully compensated with an electron-proton collision. Congratulations to the whole e-lens team!

There was also good news from the recent meeting of the High Energy Physics Advisory Panel (HEPAP). The Accelerator Test Facility (ATF) is now an official DOE User Facility. ATF has been operating as a user facility for more than 20 years and this official recognition is well deserved. Congratulations!

**VIEW [CONFERENCE PROJECTIONS FOR 2015](#): DUE ASAP -**

**\*[CONFERENCES SHOULD BE PROJECTED THROUGH DECEMBER 2015](#)\***

### DID YOU KNOW??

*Check out who received an [employee Service Award](#) this year!* Collider-Accelerator Dept. employees who received a [Service Award](#).

*Check out who received an [employee Spotlight Award](#) this year!*

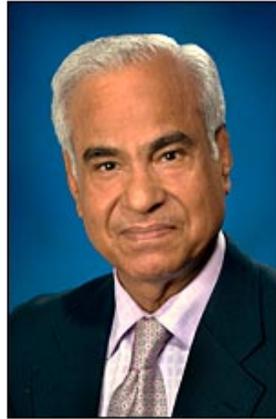
### EVENTS/SEMINARS...



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

BNL.

***Congratulations goes out to Suresh Srivastava for receiving Emeritus I-  
[Read More here..](#) Please take a look at Dr. Pile's contribution for more  
acknowledgement and praise.***



***Steve Bellevia*** captured a few photos during his first "*Messier Marathon*" on the night of *March 18th* - See the pictures in his flicker account [here](#).

<https://www.flickr.com/photos/125134422@N06/sets/72157651037298698/>

Apr. 16 - (Bldg 510 | 3pm) Particle Physics Seminar "Cosmology with Strong Gravitational Lenses" Presented by Phil Marshall, SLAC

Apr. 21 - (Bldg 510 - LSR | 3:30pm) Physics Colloquium "Neutrinos and friends in the past and present universe" Presented by Alex Kusenko, UCLA

Apr. 23 - (Bldg 510 - SSR | 3pm) Particle Physics Seminar "(Real) Early Universe Cosmology with Quark Gluon Plasma" Presented by Niayesh Afshordi, Perimeter Institute for Theoretical Physics

Apr. 28 - (Berkner Hall Aud | 4pm) BSA Distinguished Lecture

Apr. 29 - (Berkener Hall Aud | 4pm) 504th Brookhaven Lecture  
*Do you have to give a talk?*

**Public Speaking Techniques:**

**Verbal & Non-verbal**

*Presented by:*

*Theodore Sampieri Ext: 4894*

*12:00 – 1:00 Fridays*

CAD Building 911

*Large Conference Room: 2<sup>nd</sup> Floor*

## **IN OTHER NEWS...**

***A Years after shutting down, U.S. atom smasher reveals properties of 'God particle'***- *In a scientific ghost story, a U.S. atom smasher has made an important scientific contribution 3.5 years after it shut down. Scientists are reporting that the Tevatron collider in Batavia, Illinois, has provided new details about the nature of the famed Higgs boson— ...*  
[Continue reading](#)

***The U.S. Government's \$800 Billion Gamble on Student Loans***- One of the big potential costs to U.S. taxpayers over the next years is an enterprise that's currently estimated to be even a bit profitable for them: financing student loans. ....[read about it.](#)

## NOTE FROM OUR ADMINISTRATION: S. LaMontagne



Our guest columnist, Ann Lamberti, offers the following advice to personnel using DoE vehicles in the performance of their job responsibilities.

**READ CAREFULLY.** C-AD may be required to give back vehicles.

Fleet Management has advised us that several of the department's government vehicles are trending low in usage during the mid-year review and are at risk. Failure to achieve the FY15 utilization goals will result in the loss of vehicles from our fleet. All Department vehicles custodians have been notified of their utilization goals. Utilization is measured in recorded miles over a 12 month period beginning in August and ending in July. In the current year, minimum mileage requirements were based on the previous year's usage. We will work with Fleet Management in Staff Services to forecast a more realistic goal and reporting period for FY16 based on the department's work priorities and projects. But in the meantime, in order to retain our vehicles, I suggest that YOU CAN HELP by doing the following:

- Ensure that mileage log sheets are submitted to Steve Bubka every month
- Increase usage in vehicles by swapping with other groups when feasible
- Loan an underutilized vehicle to another group on a month- to-month basis depending on job scope
- Advise Steve Bubka that your vehicle is available for use as a "pool" vehicle on a temporary basis

In summary, **the preservation of the fleet is in your hands.** If you submit monthly logs as required and work with personnel to rotate vehicle assignments to increase mileage, we can maintain the size of the fleet.

---

## NOTE FROM OUR ACCELERATOR DIVISION: Wolfram Fischer



The 100 GeV RHIC polarized proton run was extended to 27 April 2015, and we are on track for integrating more luminosity at this energy than from all previous runs combined (so far we ran 9 times at 100 GeV). The average store luminosity has almost doubled compared to 2012, the last time we had 100 GeV polarized protons, thanks to higher bunch intensity from the source and the injector chain, and upgrades that allow for higher beam-beam parameters in RHIC, namely a new lattice and the electron lenses.

On 27 April Vincent Schoefer, the present Run Coordinator, will hand over to Chuyu Liu, and we will start with another mode that has never been done before, polarized protons on gold ions.

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 ACCELERATOR R&D DIVISION: Ilan Ben-Zvi



### Polarized electron gun:

The Gatling Gun main vessel and cathode shroud was assembled inside the High Voltage enclosure in the physics department at Stony Brook University. The system has undergone high voltage conditioning tests and it appears that the field emission problem that limited the maximum cathode voltage during low current tests at the contractor in California have been corrected. During this period a custom titanium sublimation pump system designed to establish vacuum pumping in close proximity to the cathodes themselves was demonstrated and made ready for installation and the combiner magnet was rewired to provide a superior dipole field to what was used for the initial beam tests in California.

**The LHC Accelerator R&D Program Group:**

The proof of principle double quarter wave crab cavity has been successfully cold tested at CERN. The cavity reached almost 5MV in deflecting voltage at 2K, which is 50% higher than the demanded LHC operation voltage. The prototype cavity is under fabrication at Niowave Inc.. All stamped parts are made, and some minor defects were found on the surface that can be polished and cleaned. Two external reviews were completed for the higher order mode (HOM) damper; experts in each field have reviewed both RF and mechanical aspects. The design has been suggested to go into fabrication.

### **Superconducting RF:**

#### ERL

The first new cathode was installed and conditioned in the SRF gun. Conditioning was very quick and the new design proved to be truly multipacting-free. The second cathode is being prepared for conditioning while optimization of the photocathode layer deposition is in progress for the first cathode.

#### 56 MHz cavity

The cavity has reached ~1 MV so far. Conditioning is done at every opportunity when there is no beam in RHIC for a few hours and IP4 is secured. APEX experiment clearly demonstrated that we cannot operate the 56 MHz cavity without HOM couplers. Fabrication of the couplers is in progress at JLab with the first two scheduled of delivery in mid-summer.

#### CeC 112 MHz SRF gun conditioning

The SRF gun is conditioned to 1.1 MV in CW and 1.3 MV in pulsed mode, limited by Field Emission. Further conditioning is in progress and is typically performed in parallel with RHIC operation. The photocathode puck is scheduled to be inserted later in April, which will be followed by an attempt to generate first photoemission beam.

#### CeC 5-cell cavity cryomodule

The cryomodule is under assembly at Niowave. A cryogenic test will be performed in April.

#### eRHIC LDRD on 5-cell 422 MHz cavity

The 5-cell cavity RF design is complete. Works has started on the mechanical design.

### **CeC additional information:**

All three wigglers for CeC PoP FEL had been assembled and demonstrated excellent performance at the Novosibirsk Institute of Nuclear Physics. They are packed and ready to be shipped to BNL.

### **The Accelerator Test Facility <http://www.bnl.gov/atf>:**

The big recent news is that the ATF has been approved as a formal Office of Science User Facility. This is a privileged status, which carries responsibilities and high visibility. This designation portrays the high-level recognition of the ATF's past performance, current significance and future importance to the Office of Science, the craft of accelerator science and technology and the international community of users from industry, academia and major laboratories. It also conveys the significance of the ATF to BNL, a laboratory in which accelerator science and technology has always played a key role.

The ATF staff is getting engaged deeper into the design and construction of the new ATF-II facility. New beam lines and experimental halls laid yet on blueprints will be soon erected inside a newly constructed blockhouse in building 912. The Stage 1 of this project is scheduled for completion in 2018. However, we plan the first ATF-II house warming before the end of 2015 already with the first user experiment, Ultrafast Electron Diffraction, going in business in a big clean room that will accommodate the ATF solid state lasers as well. Completion of Stage 1 of the ATF-II upgrade will open to users three spacious experimental halls supplied with up to 100 MeV femtosecond electron bunches in combination with a 100-TW, 100-fs laser beam from our next-generation CO<sub>2</sub> laser called BESTIA<sup>®</sup> (Brookhaven Experimental Supra-Terawatt Infrared at ATF).

The ambitious parameters projected for this first CO<sub>2</sub> chirped pulse amplification laser just got closer to within reach after the recent world's first proof-of-principle demonstration of the stretching and recompression (called CPA, for Chirped Pulse Amplification) in our current operational CO<sub>2</sub> laser. The first report on this will be made public next month at CLEO.

Much progress has been made in the ATF-II project, including

- The detailed lattice that is define and the position of the Gun, linac section, quads, dipoles beam dumps on all the stage one beam lines are now defined in CAD format and this allows Charlie Folz to proceed with the experimental hall shielding.
- The 100TW laser amplifier pressure vessel contract was finally placed with the GNB Corporation.
- The plan was implemented to incorporate the UED and the Gun drive laser into the Environmental Room and a contractor has now been hired to move the ER from the 902 Annex to building 912.
- Much equipment has been harvested from the NSLS building 725 and the first pallets of equipment have finally been approved to be moved from 729 to 912.

In spite of this ongoing activity in developing ATF-II, our users continue with the ATF's business as usual. A statistically stable rate of beam time delivered over the reported period to eight user experiments. Two newest highlights from our diverse user program are:

- A monumental task of imbedding a CO<sub>2</sub> laser into a linac beam line is completed, and researchers position themselves to study inverse Compton scattering from multiple laser- and electron- bunches colliding inside a close-loop active laser cavity (user - RadiaBeam).
- The first semester of a new Experimental and Computational Accelerator Physics course for CASE students is at full spin at the ATF. This new initiative will surely increase the ATF impact on education of a new breed of accelerator scientists (user - Stony Brook Univ.)

---

## NOTE FROM OPERATIONS: Paul Sampson



The RHIC Polarized Proton Run continued through March and early April and will conclude on April 27<sup>th</sup>, when the changeover to Gold-Polarized proton running is scheduled to begin. Continued improvements, including the routine operation of the e-Lenses have produced high luminosity with good polarization and very good polarization lifetimes. Both STAR and PHENIX are well on their way to achieving luminosity and figure-of-merit goals.

On April 27<sup>th</sup>, preparation for the Gold-Proton run will include moving RHIC "DX" magnets while cold. Planning and preparation for this is ongoing. It is expected that the moved can be made during an extended maintenance period. Operations and CAD will take advantage of this period to perform maintenance items and continued CeC/PoP installation and construction.

During March and April the e-lens for Blue and Yellow were successfully tested commissioned and are presently in operation for production stores, producing high luminosity on a regular basis.

Optimization of the injectors continues with efforts focusing on maintaining good polarization, intensity and low emittance.

LINAC continues to run very well for BLIP production and research while NSRL users are utilizing various ion species and protons from the Booster.

Maintenance periods are presently being held on a bi-weekly schedule, with APEX on alternate weeks.

The "[RHIC Broadcast](#)" link displays the latest schedules for testing, power disruptions, outages and daily schedules.

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

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

## NOTE FROM OUR EXPERIMENTAL SUPPORT & FACILITIES DIVISION: Phil Pile



I would like to congratulate Suresh Srivastava. Suresh was granted Emeritus status by the laboratory last week. Suresh retired on 2 January this year after 40 years of service at BNL. Suresh served as Head of the Medical Isotope Research and Production Program from 1983 to 2013, a program that has been, and continues to be, instrumental in the conception, development, introduction, and production of a number of radionuclides for imaging and therapy in Nuclear Medicine. Suresh has published 205 refereed journal articles, over 250 abstracts, 26 book chapters, and many seminal review articles. He is the inventor or co-inventor of 37 patents (5 pending), and 3 statutory inventions. Many products he has developed are being marketed. Of particular note is the development of a kit (UltraTag RBC, since 1991) to label red blood cells with a radioactive technetium isotope (Tc-99m), allowing the imaging (low energy gamma ray from Tc-99m) and detection of coronary artery disease. More recently an effort to commercialize a radioactive isotope of tin (Sn-117m) has taken off. Sn-117m labeled compounds are seen as useful and unique for simultaneous imaging and treatment of certain cancers and atherosclerotic disease as well as palliation of metastatic bone pain. In retirement Suresh has continued his support for the commercialization of Sn-117m which is now in the clinical trial stage. He remains active in a number of professional organizations and is currently President of the World Association of Radiopharmaceutical and Molecular Therapy (WARMTH), an association he co-founded. Again, congratulations go to Suresh!

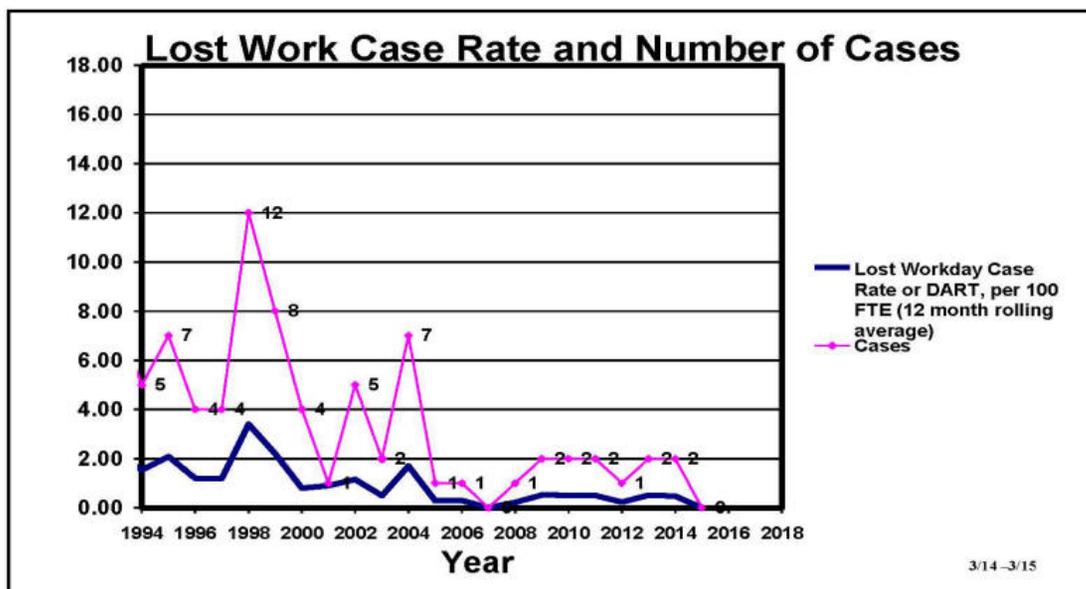
RHIC Run15 is progressing very well with 8 weeks (physics mode) of 100 x 100 GeV polarized protons completed. This part of the RHIC run was originally scheduled for 9 weeks in the physics mode but at the request of the experiments, in particular STAR, the run time was extended by 10 days. The integrated luminosity to this point is tracking just below the "Maximum" luminosity projection with beam polarizations tracking slightly below the 60% goal set by the experiments. The experiment goals for both STAR and PHENIX appear to be within reach with the 10 day extension. The excellent performance of the new electron lenses in RHIC has made it possible to put a record number of protons in each RHIC bunch (44% more to date) and with that achieve record luminosities. Next up will be ~100 GeV polarized protons colliding with a 100 GeV/n gold beam. This will be a new beam configuration for RHIC and will require DX magnets to be moved to reduce aperture constraints that come with this asymmetric beam configuration. The plan is to run for 5 weeks in the physics mode then, if time permits, change to polarized protons on aluminum, another new beam combination in RHIC. Run 15 is presently scheduled to end with cryo warm-up beginning on 19 June.

sPHENIX update – Room temperature tests (vacuum, hypot, impulse, pressure etc) have begun on the BaBAR superconducting solenoid. So far-so-good! We have received two truck-loads of supplemental equipment from SLAC during the past month with one more final shipment in the works. Low current tests with the coils at superconducting temperature are in the planning stage and will happen later this year followed by a full current test next year. The solenoid is located in bldg. 912 near the ERL facility with cryogenic cooling coming from the ERL cryo plant.

The BLIP run has been extended through July, as was the case last year. This past week we completed the first of two 10 day irradiations of thorium foils in support of the Ac-225 project, a joint project with ORNL and LANL. The thorium targets were shipped to ORNL this week for processing. Other R&D irradiations in March included scandium, platinum and tungsten targets. Sr-82 production runs followed by processing in the TPL and shipment to customers continue to be the dominate activity for the group. To date we have processed three BLIP batches with one ready to be processed next week. A total of eleven BLIP batches for the year are planned at this time. We have a request for delivery of the isotope Beryllium-7 (53 day half-life) to a customer (ORNL). It is interesting to note that this isotope is made by the interaction of BLIP protons with the BLIP target cooling water so to harvest this isotope we have to withdraw a few gallons of cooling water from the system and do the chemistry to extract the beryllium. This is the first request in several years for this isotope so we have to dust-off old processing procedures to make this happen.

The next NSRL run began on 14 March with a three days of beam for electronics tests for a non-NASA project. NSRL beams (Kr, Xe and Au) were used to test the radiation resistance of some electronics components to be installed in the Alpha Magnetic Spectrometer (AMS), an instrument mounted in the International Space Station designed to search for "Dark Matter". The tests were successful and Ting advised us he may be back for more tests at a later date. As always, the NSRL crew continues to deliver quality support and with that cultivate satisfied customers. The NASA experiments (NSRL 15A) began on Wednesday, 18 March and are scheduled to run through Friday, 8 May. NSRL 15B will follow within a few days and is to be scheduled.

## SAFETY STATS: Peter Cirnigliaro



**C-AD Occupational Injury Statistics**

	For Year 2014	For Year* 2015
First Aid Cases	8	3
Recordable Cases	3	1
Lost Work Cases	1	0

\* Calendar Year through 3/15

## ARRIVALS: Welcome!

March 13 - Weimin Zhou - (Chemistry Assoc. III) Working in MIRP/BLIP with S. Smith.

March 23 - Enrique Schuhmacher - (Advanced Applications Engineer 17) Working with S. Nemesure

STARTING\* April 13 - Bryan Callaghan - Working in CES with Nick Franco

## DEPARTURES: Farewell, you will surely be missed..

### Guest Notices:

March 15-17 - Claudia Tambasco (Guest Research Ass.) working with W. Fischer

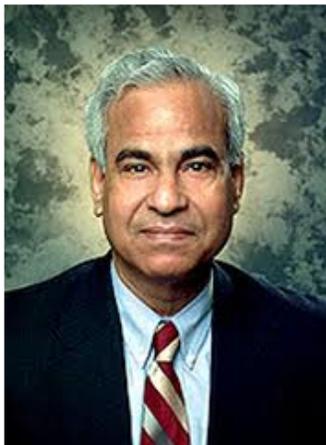
March 5 - Jun Tamura (Guest Scientist) working with M. Okamura - EXPIRED

March 11 - Kazuyoshi Koyama (Guest Scientist) - EXPIRED

April 19 - Kotaro Kondo (Guest Scientist) working with M. Okamura - EXPIRED

April 29 - Yasuhiro Fuwa (Guest Scientist) - EXPIRED

## CONGRATULATIONS: **Suresh Srivastava**



Please join me in congratulating Dr. Suresh Srivastava (Tenured Sr. Medical Scientist) on being granted Emeritus status effective April 2, 2015. Suresh retired from BNL on January 2, 2015, and in addition to a remarkable list of awards he has received over the years, Suresh served as the Head of the Medical Isotope Research and production Program at BNL from 1983 to 2013, was awarded tenure in 1985, named Senior Medical Scientist in 1990, and also holds an academic appointment as Research Professor of Radiology at the Stony Brook University Medical Center.

The research programs that Dr. Srivastava has led, used the BLIP facility, which has been instrumental in the conception, development, introduction, and production of a number of radionuclides for imaging and therapy in Nuclear Medicine. Dr. Srivastava has been active in the U.S. Society of Nuclear Medicine, American Chemical Society in many capacities, and is a Co-Founder and Governing Body Member of the World Association of Radiopharmaceutical and Molecular Therapy (WARMTH), and was elected as president for 2015-2016, as well as being the inventor or co-inventor of 37 patents (5 pending), and 3 statutory inventions.