

OCT '16
ISSUE

PARTICLE POST

COLLIDER-ACCELERATOR DEPARTMENT

PREVIOUS ISSUES
September 2016 -

Contact: [A. Lamberti](#)

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Quote of the Month: "Science and everyday life can not and should not be separated" - Rosalind Franklin

A WORD FROM:

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NOTE FROM OUR CHAIR: Thomas Roser

Since no federal budget has been passed during the last fiscal year Congress has passed a Continuing Resolution (CR), essentially continuing last year's budget levels until December 9, 2016. This is well after the elections and should allow for passing of a FY17 budget during the "lame-duck" session of the present Congress. The RHIC operation budget ended the last fiscal year, FY16, without a deficit but also with very little carry forward funds. The CR will allow us to continue the busy summer shut down work and prepare for the upcoming run, but we need to constrain spending to also prepare for the not unlikely possibility that the CR will be extended throughout the whole 2017 fiscal year.

[VIEW UPCOMING CONFERENCE PROJECTIONS](#)

PROJECTIONS DUE ASAP

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!

On September 29th, C-AD celebrated Caitlin Hoffman's baby shower! What a beautiful celebration organized by Anna Petway!

EVENTS/SEMINARS

October 18 - (Bldg. 461 & 478 | 11:30 am) Healthfest: Gym, Weight Room, and Pool Open House

October 18 - (Recreation Hall, Bldg. 317 | 5 pm) Healthfest: Table Tennis Premier Singles (Intermediate Level)

October 19 - (Bldg. 478 Pool | 11:30 am) Healthfest: 800-Yard Swim

October 25 - (Recreation Hall, Bldg. 317 | 5 pm) Healthfest: Table Tennis Master Singles (Expert Level)

October 26 - (Hamilton Seminar Room, Bldg. 555 | 12 pm) Healthfest: Nutrition Talk

October 27 - (RHIC Ring, Bldg. 1005 | 12 pm)



Healthfest: Bike Ride

November 3 & 4 - (Berkner Lobby | 10 am - 2 pm)
Books Are Fun Book Fair

November 8 - (Berkner Hall, 8 am) Office of
Educational Programs Event "Sci-Ed Day"

November 11 - Lab Holiday: Veterans Day

November 11 - BERA Trip: Culinary Institute of
America & Walkway Over the Hudson

IN OTHER NEWS...

*SNMMI's 63rd Annual Meeting Highlights History of
FDG and Showcases New Research*

More than 5,700 physicians, technologists, scientists and exhibitors gathered at the Society of Nuclear Medicine and Molecular Imaging's 2016 Annual Meeting, held June 11-15 in San Diego, CA. This year's meeting included a celebration of the 40th anniversary of FDG. [Read more.](#)

*Local Scientists Take Home First Place Honors in BNL
Science Fair*

Budding young scientists filled the auditorium of the Suffolk County Legislature on Wednesday to educate Legislators on their outstanding projects that won first place accolades at the year's Brookhaven National Laboratory's Science Fair. [Read more.](#)

*New Graphene-Glass Combo Powers "Spontaneous" Solar
Cell*

Brookhaven Does (Graphene) Windows. Apparently the Brookhaven solution to the graphene problem has been staring everybody in the face, ever since graphene was first discovered in 2004: ordinary glass window. [Read more.](#)

*Research Teams Use DNA to Make 3-D Nanoparticle
Structures with High Precision*

DNA strands anchored to the surface of nanoparticles allow researchers to assemble the particles into three-dimensional crystalline lattices. Such control allows



researchers to make new materials with desirable properties. [Read more.](#)

Farmingdale takes first in BNL High School Science Bowl
Farmingdale High School students have one contest down to a science. [Read more.](#)

New cathode material stops batteries turning crusty with age
Scientists at three US Department of Energy (DOE) national laboratories have discovered how to keep a promising new type of lithium ion battery cathode from developing a crusty coating that degrades its performance. [Read more.](#)

RHIC Particle Smashups Find that Shape Matters
Scientists colliding football and sphere-shaped ions discover evidence supporting a paradigm shift in the birth of the quark-gluon plasma. [Read more.](#)

Two American Physics Labs Are Vying for a Billion Dollar Particle Accelerator
Two labs are vying for government funding to host a billion-dollar atom smasher, and the battle is getting political. [Read more.](#)

Neutrinos Change Their Flavor and Snag Another Nobel Prize
Early this morning the world learned that the 2015 Nobel



Prize in Physics has been awarded to Takaaki Kajita and Arthur B. McDonald for discovering that neutrinos can change from one type to another. [Read more.](#)

World's largest atom smashers create world's smallest droplets

How long can a droplet shrink and remain a liquid? [Read more.](#)

'Inflatable Dark Matter' Could Explain Why We See Less Than Many Theories Predict

Many wonderful theories that explain the evolution of the universe fail because they predict more dark matter than is actually out there. Now a new paper proposes one event in the early universe that would reduce the amount of dark matter in all the theories. [Read more.](#)

Ion collider produces droplets of primordial goo

The Relativistic Heavy Ion Collider just spit out tiny droplets of a liquid researchers say resembles the seeds of the cosmos, primordial goo created by the Big Bang, which existed on briefly before cooling the matter that helped birth stars, galaxies and planets. [Read more.](#)

Brookhaven National Laboratory projects are up for awards

Four projects developed at BNL have been nominated as finalists for awards to be presented this year by a national





magazine. [Read more.](#)

Scientists Create Primordial 'Perfect Liquid' in Lab
The BNL's Relativistic Heavy Ion Collider smashed together large nuclei at nearly the speed of light to recreate the fundamental particles in the primordial soup present during the earliest days of the universe. [Read more.](#)

World's most powerful digital camera being built by US Department of Energy
The US Department of Energy is building a digital camera that puts your camera to shame. [Read more.](#)











Congratulations, Caitlin! We wish you, your family, and Baby H all the blessings in the world!

WHAT'S GOING ON IN OUR NEIGHBORHOOD?

Interested in Cycling?

<http://www.bicyclelongisland.org/majoride.htm>
<http://www.cyclotour.com/events.htm>

Interested in Running or Walking?

DAY AT THE VINEYARDS...

Duckwalk North - SOUTHOLD - Music on Saturdays (4-6pm)

Castello di Borghese Vineyard & Winery - CUTCHOGUE
- Vineyard Tours & Wine Tastings Every Thursday & Sunday at 1pm & FREE Jazz Every Saturday (2-4p) with Marguerite Volonts

Walk for Beauty 2016 - October 23 (8:30 am) 4K/6K Breast Cancer Awareness Walk for Beauty and "Hercules on the Harbor" 10K Run.

...Check out the [LI Running Calendar](#) for more!

For the Kids:

Youth Programs - Port Jefferson Village Recreation Department presents a number of youth programs and summer camps your child can enjoy this summer. Find more information [here](#).

Stony Brook Events:

26th Annual Scarecrow Competition - September 30 -October 31 Be the judge and vote for your favorites!

Ladies Night Out - October 20 (6 pm - 9 pm) in Stony Brook Village Center. Enjoy a fun filled night out benefiting breast cancer research at Stony Brook Medicine. Music, cocktails, raffles and more!

Long Island's Got Talent Finals 2016 - October 21 (6:30 - 9 pm) at the Educational and Cultural Center. Come see the final 7 perform and be there when a winner is chosen!

Historic Haunts of Long Island - October 27 (7 - 8:30 pm) at Educational and Cultural Center. Join for a book signing and lecture featuring author Kerriann Flanagan Brosky and paranormal investigator and medium Joe Giaquinto to uncover Long Island's eerie history!

Halloween Festival - October 31 (2 - 5 pm) in Stony Brook Village Center. Pumpkin painting, games, kids crafts, trick or treating, and more!

The Creation of Stony Brook Village - June 1, 2016 - May 31, 2017 (10 am - 5 pm) at the Educational and Cultural Center. Experience the story of the reconstruction of Stony Brook Village through historical documents, photos, original blueprints, sketches, memorabilia and more.

4th Annual LEGO Building Contest & Exhibit - September 17 - October 16 (10 am - 5 pm) at the Educational and Cultural Center. Come see all the amazing creations on display and be sure to vote for your fan favorite with your paid admission ballot! Exhibit admission is \$4 for adults and \$2 for children.

Discover Wetlands Cruise! - Take the pontoon boat "Discovery" on a 1.5 hour tour through an 88-acre wetlands preserve. A naturalist is onboard to describe the wildlife and flora that you'll see.

Port Jefferson Events:

Paint Wine Glass Fundraiser Night -October 19 (7 - 10 pm) at Ruvo Restaurant & Bar

Harvest Fest 2016 - October 30 (12 pm - 5 pm) in PJ Village. Costume the family and pets and enjoy the tricks and treats around town.

Farmers Market - Every Sunday through November (9a - 2p) at the Village Center. Purchase local produce, honey, bread and baked goods, seafood, international specialties, plants and flower bouquets.

Jamesport Vineyards - JAMESPORT -Live Music from 1-4pm every Fri, Sat & Sun

Martha Clara Vineyards - RIVERHEAD - Live Music every weekend

Palmer Vineyards - RIVERHEAD - Live Music every Sat (12-4).

Pindar Vineyards - PECONIC - Live Music Every Saturday (1-5pm)

Baiting Hollow Farm Vineyard - BAITING HOLLOW - Music every Sat & Sun from (2-6)

Paumanok Vineyards - RIVERHEAD - Fresh, Local Oysters (2-5pm) every Sat & Sun starting Memorial Day through September

Check out Erik Forsyth's Travels:



[HTTP://WWW.YACHTFIONA.COM](http://www.yachtfiona.com)

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NOTE FROM BUSINESS OPERATIONS: Sue Pankowski



Fiscal year 2016 came to a close on September 30. During the year, our department had costs totaling \$171 million! That's over one-quarter of the laboratory as a whole, and more than one-half of the NPP directorate. The bulk of C-AD costs (77%) were for RHIC operations and related upgrade efforts. Other major efforts within the department included MIRP (55%), ATF/ATF II (4%), and NSRL (4%), while all other programs combined accounted for 10% of total C-AD costs.

Thank you for your efforts to help control costs during the final months of FY2016, as well as for your continued cooperation as we begin the new year without a firm federal budget in place. This new year started on a continuing resolution. Generally, what this means is that our DOE operating programs typically will continue to be funded at fiscal year 2016 levels until December 9. With Congress now in recess, it is unlikely that any major science-related legislation will take place until after the November election. Keeping our lack of a definitive FY2016 budget in mind, we ask for your continued cooperation on cost control. Spend wisely on critical work scope supporting LEReC, CeC, RHIC run 17, as well as other necessary departmental efforts.

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NOTE FROM OUR ACCELERATOR DIVISION: Wolfram Fischer



The NSRL run is now under way while we are preparing for the next RHIC run, with polarized proton collisions at 255 GeV beam energy.

A notable milestone in the LEReC project was reached with DC gun that was manufactured at Cornell. The gun conditioned to 440 kV within 44 hours at Cornell (the operating voltage is 400 kV), and is now being prepared for shipment to BNL. Many from Cornell and BNL contributed to this success.

In less than a month we will have the C-AD Machine Advisory Committee here, which will focus this time on SRF and DC electron guns.

Upcoming events:

10/31 - 11/02/16 C-AD Machine Advisory Committee, BNL

11/16 - 11/17/16 DOE Project Review of LEReC, Germantown

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NOTE FROM OUR EXPERIMENTAL SUPPORT & FACILITIES DIVISION: Bill Christie



Work on the RHIC experiments has progressed over the past month.

For PHENIX the Repurposing and Recycling (R&R) effort continues. The primary effort through the summer and into the Fall has been concentrated on the disassembly of the East Carriage. The expectation is that this East Carriage effort will be complete by the end of October. Next up for PHENIX will be the R&R of the South Muon Magnet. The expectation is that this effort will take six to eight weeks. The final large piece for PHENIX prior to the run is to move the Central magnet from the interaction region into the assembly building, and then construct the shield wall.

For STAR, a lot of the effort in the past month has been to reconnect all of the various utilities and detector related connections after having rolled the detector back into the interaction region. The shield wall has recently been reinstalled between the IR and the Assembly building. The schedule calls for the vacuum beam pipe in the STAR IR to be completed and baked out by the end of October. There are two new detector systems still in the fabrication stages for STAR, and FMS Post Shower detector, and an Ultra Violet LED system to anneal the FMS pb-glass detector to counteract the expected radiation damage during Run 17. At this point both of these efforts are expected to be completed and commissioned prior to the start of Run 17.

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NOTE FROM OUR ERHIC R&D PROGRAM: Ferdinand Willeke



No comment at the time of this publication.

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NOTE FROM OPERATIONS: Paul Sampson



Shutdown for RHIC and in the AGS continues throughout October. Major effort in RHIC is focused in the 2 o'clock region on construction and installation of LEReC and CeC PoP facilities and in the 4 o'clock area on 9 MHz and other RF systems. Preparation and initial testing for the upcoming run has commenced in both RHIC and AGS. The STAR detector is in position in the tunnel and work continues on schedule. PHENIX reclamation and repurposing efforts continue on schedule as well.

The AGS cold snake has been tested and is in good working condition. It will remain at 4k for run 17. AGS Checkout will occur next month and startup with beam will occur in December. Booster turn on was completed last month and NSRL will run throughout October and start up this month for NASA and NSRL. Commissioning of the new Access Controls System was completed during startup and the system is now fully functional.

LINAC maintenance and shutdown work is nearing completion. Installation of the new low level RF system and modification of Mod 5 for increased pulse width continues on schedule. RF testing will commence this month and startup with beam late in November.

EBIS and Tandem are providing beams for Booster and NSRL as necessary.

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 Shutdown or to review past results, go to 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.

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Link to: [ATF Newsletter](#)

NOTE FROM OUR ACCELERATOR TEST FACILITY: Mark Palmer



No comment at the time of this publication.

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NOTE FROM OUR MEDICAL ISOTOPE RESEARCH & PRODUCTION PROGRAM: Cathy Cutler



The MIRP group uses the BLIP to irradiate targets for production of radioisotopes that are used for nuclear medicine applications, *in vivo* imaging of function and/or therapy, and sources for calibration and research. These irradiations involve large targets which then must undergo further processing. Typically, irradiated targets go through chemical separations to isolate the desired radioisotopes from bulk target material and other impurities present in the sample. Due to the highly radioactive nature of these targets, the processing occurs inside heavily shielded hot cells in Target Processing Laboratory (TPL) in Bldg. 801. The hot cells are equipped with manipulators that behave as extended "hands" inside the hot cell allowing operators to perform almost all tasks that can be done on the lab bench.

Manipulator work plays a crucial role in isotope processing and waste disposal. In the past, our manipulators were equipped with a standard grip (see Fig. 1) that required operation with two hands. Prolonged use of standard grip manipulators can lead to fatigue (or even injury) in operator wrists, forearms, and shoulders. In order to improve the ergonomics of the manipulators, the MIRP upgraded the grips to pistol style (see Fig. 2) on two sets of manipulators in 2014. The operation of the pistol grips can be operated single-handedly as it requires much less pressure to close the jaws on the hot cell side. We received a grant in June 2015 from the National Isotope Development Center to install the pistol grips for the remaining manipulators after positive feedback from operators.

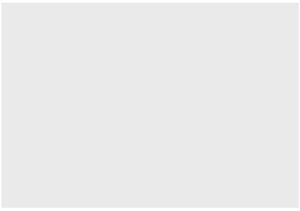


Fig. 1 Standard manipulator grip



Fig. 2 Pistol style manipulator grip

Unfortunately, there were two similar manipulator failures at the manipulator wrist in 2016: one in September and one in October. The 2016 production season was a busy year with increased demand for routine isotopes and a lot of research activity, and thus, increased manipulator use. In addition, we had increased manipulator use by not very experienced users that could have contributed to unusual wear and tear of manipulator cables. In order to evaluate these failures further, Steve Pontieri brought in Steve Bellavia, an engineer that had previously worked at TPL and had familiarity with manipulators. After an initial investigation, a possible issue with the pistol grip design was discovered. The pistol grip motion might be causing the cable to rub and fray, and eventually fail (as shown in [this video](#)). Steve Bellavia performed an initial inspection and proposed a plan of action for which we are very grateful. Hopefully, we will be able to prevent future failures on the existing manipulators as we are preparing for FY2017 isotope production season. We want to thank the C-AD engineers for their assistance with our manipulators and all the many other things they assist



our group with throughout the year.

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ARRIVALS: Welcome!

Roy Rosselot - ES&F Division

Glynnis Saquilayan - Preinjector Systems, Accelerator Division

DEPARTURES: Farewell, you will surely be missed..

Timothy Phelps

Robert Ritter

Guest Notices:

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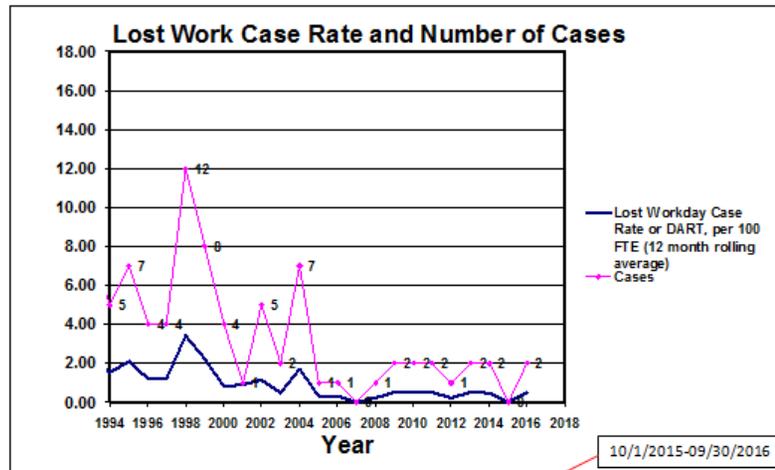
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SAFETY STATS: Peter Cirnigliaro



10/1/2015-09/30/2016
Rolling Average for 12 months

C-AD Occupational Injury Statistics

| | For Year 2015 | For Year* 2016 |
|------------------|---------------|----------------|
| First Aid Cases | 5 | 3 |
| Recordable Cases | 1 | 2 |
| Lost Work Cases | 0 | 2 |

* Calendar Year through 09/30/2016