

BREA NEWS

www.bnl.gov/bera/activities/brea/

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May/June 2021

BREA Meetings

BREA meetings are held on the second Tuesday of every month (except for August), at 1 p.m. All BREA members are invited to participate. ***As long as the BNL site continues to be closed to retirees, BREA may arrange an alternate mode of communication. Watch for email notices.***

Meeting Schedule

May 11, 2021 ***via video link, BNL site closed to retirees***

June 8, 2021

July 13, 2021

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From the President

by Arnie Moodenbaugh, moodenba@optonline.net

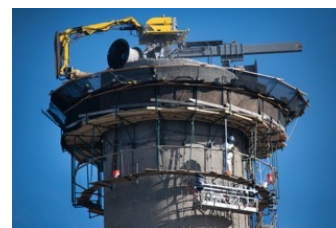
To fellow BREA Members,

Springtime is here. Even at our home on Long Island, our somewhat neglected lawn is green and growing, and we have at least one daffodil flower that the deer haven't found yet. My wife and I fairly easily obtained both Covid-19 shots in March. Some things finally seem to be looking up.

Progress is also being made at BNL, but by demolition. Removal of the HFBR stack started in early January 2021 and was completed by late February 2021, using methods that minimize risk to people and the surrounding environment.

The little photo at right is probably the last you'll see of the familiar 320-foot-tall stack on the BNL campus. In the larger photo, that yellow contraption dangling next to the stack (already stripped of its red and white paint, which contained asbestos and lead) is MANTIS, a chimney-demolition machine. And on the right is a photo of MANTIS chomping its way down the stack. You can see photos of the entire process at <https://www.bnl.gov/stakeholder/docs/CAC/Extra-Stack-Photos.pdf>.

All BREA meetings are being held virtually until further notice due to BNL site restrictions. Upcoming BREA meetings via Zoom are Tuesdays at 1 p.m. EDT on May 11, June 8 and July 13. About 20 to 30 members usually call in. We encourage all of you with good internet service to participate. Contact me (moodenba@optonline.net) if you are not familiar with Zoom and would like some help. The Lab is currently in Phase 2, which includes expanded limited operations. Some issues that may affect BREA members include ID badge renewals for retirees and their



– MANTIS photos by
Roger Stoutenburgh

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Brookhaven Lab's Top-10 Stories of 2020



With all the remarkable changes and challenges that took place in 2020, BNL had a banner year in science. Many Lab employees worked remotely to keep vital science programs running while minimizing the spread of SARS-CoV-2, the virus responsible for the COVID-19 pandemic. And throughout this unprecedented year, dedicated Lab staff collaborated on new ways of working to transform scientific meetings, educational outreach programs, tours, and more to new virtual formats that reached larger audiences than ever before. Among the top stories of 2020, as measured by importance, page views, engagement on social media—or all three!—are:

Tackling COVID-19 – Starting in the spring, scientists across the Laboratory began to focus their expertise and the Laboratory's unique scientific tools on National Virtual Biotechnology Laboratory (NVBL)-supported efforts, user studies, and research to tackle the challenges of

COVID-19 – from computational modeling, to drug-discovery experiments at the National Synchrotron Light Source II, to exploring the properties of masks and more.

Electron-Ion Collider – Brookhaven Lab was chosen to build a brand-new nuclear physics research facility, an Electron-Ion Collider that will explore the most fundamental building blocks of matter and the strongest force in nature. Brookhaven will work closely with partners from Thomas Jefferson National Accelerator Facility in Virginia to realize this one-of-a-kind research facility.

Quantum Leaps – Brookhaven scientists took a couple of quantum leaps, making strides in extending the range of quantum communications, a stepping stone to a new quantum internet, and establishing a new collaborative Co-design Center for Quantum Advantage, which will leverage the Laboratory's expertise in materials science to build the fundamental tools needed to create quantum computers.

RHIC's Smashing Success – Nuclear physicists used our Relativistic Heavy Ion Collider – celebrating its 20th year of operations – to get a fresh glimpse of the particle interactions that take place in the cores of neutron stars, and to study how quarks and gluons, the inner building blocks of protons and neutrons, combine and stay confined within these composite particles. And our most popular social media post of the year featured stunning tracks of cosmic rays captured while calibrating RHIC's STAR detector.

Catalysts for Artificial Photosynthesis – Brookhaven chemists made new discoveries about catalysts and reactions that mimic plants ability to capture solar energy and transform it to other useful forms of energy. To advance their work on “artificial photosynthesis,” several Brookhaven chemists have joined a new center for collaborative research on developing catalysts for harnessing solar energy in liquid fuels.

Better Battery Materials – On the frontier of energy storage, scientists at Brookhaven gained useful insights into materials for making better batteries. These included discovering how structural defects can improve performance and developing a way to increase capacity of a promising high-rate electrode material featuring a unique flower-shaped nanostructure.

Biomolecule Imaging Advances – Scientists at Brookhaven developed new ways to “see” and study biomolecules. They opened a new cryo-electron microscopy center, began work to develop a quantum x-ray microscope at the National Synchrotron Light Source II, and demonstrated a new way to tag and image cell membrane proteins in 3-D.

DNA Nanostructures – Speaking of biological molecules, scientists at the Center for Functional Nanomaterials found new ways to leverage DNA as a building material for making 3-D nanosuperconductors, peptide-coated origami-like structures for delivering drugs to tumors, and other ordered 3-D arrangements with potentially tunable optical or catalytic properties.

Matter-Antimatter Asymmetry – An international collaboration of theoretical physicists, including Brookhaven theorists, published a new calculation regarding the decay of particles called kaons. Comparing the prediction with experimental measurements gives scientists a way to test for tiny differences between matter and antimatter—which could help to explain the predominance of matter in our universe.

Multi-turn Energy-Recovery Accelerator – Accelerator physicists at Brookhaven Lab and Cornell University demonstrated the world's first capture and reuse of energy in a multi-turn particle accelerator, where electrons are accelerated and decelerated in multiple stages and transported at different energies through a single beamline. This advance paves the way for ultra-bright particle accelerators that use far less energy than today's machines.

– Karen McNulty Walsh, kmcnulty@bnl.gov

President's Message (continued)

spouses. We also can't predict when in-person meetings/events will resume.

Before our February Zoom meeting, John Hill gave us a virtual presentation on Covid-19 research at BNL. Replying to a question, he said that Pfizer used NSLS-II to study structural aspects of its vaccine. Now we've learned that a biotech tool developed in the 1980s by Bill Studier, the late John Dunn and their group in BNL's Biology Department is fundamental to making Covid vaccines. Read the Lab's story at <https://www.bnl.gov/newsroom/news.php?a=218806>.

Some of you may have caught the Zoom talk by BNL physicist Vladimir Tishchenko about the Muon g-2 experiment at Fermilab that made headlines recently. (My apology to those who missed his talk because of my error in giving the wrong time in the email headline.)

The 50-foot diameter Muon g-2 electromagnet was built, installed and used successfully at BNL's AGS. Then, in 2013, it was moved to Fermilab in Illinois. The photos below show the magnet being lifted by crane off of a specially outfitted trailer and loaded onto a barge at Smith Point Marina. The journey took a month by sea and land. Fermilab's present results are basically in agreement with and an extension of the BNL data, which found a deviation from the "Standard Model" of particle physics.



– Michael Herbert

Listening to Tishchenko's talk, my own background in condensed matter physics left me somewhat adrift of the details, but the complicated strategies for sifting out and checking the results did impress me. During one of the more challenging parts of the talk, I daydreamed about my encounter with muon research years ago. In the fall of '68, I drove from Oregon to Chicago with another Portland State undergrad to participate in an Argonne Lab semester research program. There, I worked on a cosmic muon project using spark chambers, doing primarily computer analysis.

– Arnie Moodenbaugh, moodenba@optonline.net

Les Fishbone Named Fellow of INMM

Retiree and BREA member Les Fishbone spent most of his career at BNL working to safeguard nuclear materials. In recognition of his more than three decades advancing scientific diplomacy including through cooperative technical exchanges with counterparts at Russian nuclear institutes, Fishbone was elected to the rank of Fellow by the Institute of Nuclear Materials Management (INMM).



Les Fishbone
– Roger Stoutenburgh

INMM is dedicated to the safe, secure and effective stewardship of nuclear materials and related technologies. Nuclear materials management accounts for the production, use, storage, transport, handling and protection of essential elements of the nuclear fuel cycle, notably uranium and plutonium.

In its citation of Fishbone, INMM described his work as wide ranging, including systems studies of nuclear materials safeguards and development and application of a mathematical model for analyzing energy technology priorities. INMM acknowledged Fishbone's long-standing service to the institute by mentoring and guiding student, post-doc and early-career members through far-reaching articles in the Journal of Nuclear Materials Management.

While working at BNL, Fishbone also served as an adjunct professor in the Department of Political Science at Stony Brook University and, during a leave of absence, as a staff member of the International Atomic Energy Agency.

Fishbone earned his B.S. in physics from the California Institute of Technology and his Ph.D. in physics from the University of Maryland. He joined the scientific staff at BNL in 1977, working initially in the Department of Energy & Environment and, in 1980, moving to the Department of Nuclear Energy.

– Mona S. Rowe, msrowe.hi@gmail.com

Editor's note: Les Fishbone was elected INMM Fellow in July 2020. Another BNLER, Susan Pepper, chair of the Nonproliferation and National Security Department, was elected president of the INMM for a term beginning in October 2020.

Membership Renewal

Is your BREA membership expiring?
Find out by going to BREA's website:
<https://www.bnl.gov/bera/activities/brea/>

To renew, fill out the form below.

PLEASE PRINT

Last name: _____

First name: _____ MI: _____

Address: _____

Phone: _____ Email: _____

Membership type:

☐ annual (\$10)

☐ 5 years (\$40)

☐ Life (\$95)

Date: _____ Check amount: _____

MAKE YOUR CHECK OUT TO BREA

☐ I want to receive BREA News by mail
via the U.S. Post Office.

☐ I want to receive BREA News by email only.
Do not mail it to me via the U.S. Post Office.

Mail form and check (made out to BREA) to:

Beth Lin, BREA Membership Chair
81 Westchester Drive
Rocky Point, NY 11778

– Beth Lin, Membership Chair
hellobylin@yahoo.com

In Memoriam

We deeply regret to inform you of the passing of the following BNL retirees.

Marilyn McKeown, 95, April 2, 2021

Geraldine Callister Miller, 90, March 3, 2021

Jack Preses, 73, April 8, 2021

More information can be found at BREA's website:
www.bnl.gov/bera/activities/brea. To post an obituary for a deceased BNL employee or retiree, email information to msrowe.hi@gmail.com or mail it to BREA in care of BERA at the address in the panel below.

Food Drive for Island Harvest

Brookhaven Lab is doing a food drive for Island Harvest. Leading this campaign is Amy Engel, Manager of Environmental and Community Engagement. She's arranged for boxes on site for food donations, which will go directly to pantries in the neighborhoods around BNL.

Christine Carter, who supervises all BERA activities, said that Covid has made the need especially great. She described homeless in trailers and people camping in Suffolk parks all winter. "Heartbreaking," she said.

Early this year, BREA voted to make a donation to Island Harvest using funds from its treasury. For the Lab's food drive, retirees are invited to donate to Island Harvest online at <https://www.islandharvest.org>.

Brookhaven Retired Employees Association

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