



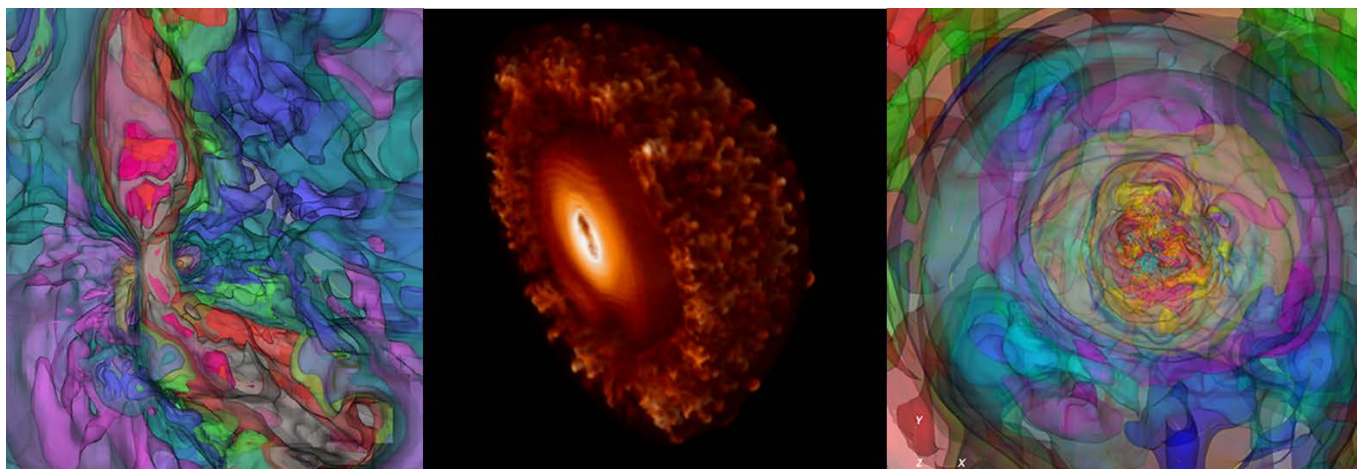
U.S. DEPARTMENT OF
ENERGY

COMMUNIQUE

Office of Science

4 May 2020

Communique provides a biweekly review of recent Office of Science Communications and Public Affairs work, including feature stories, science highlights, social media posts, and more. This is only a sample of our recent work promoting research done at universities, national labs, and user facilities throughout the country. *Please note that some links may expire after time.*



World's First 3D Simulations of Superluminous Supernovae

For most of the 20th century, astronomers have scoured the skies for supernovae—the explosive deaths of massive stars—and their remnants in search of clues about the progenitor, the mechanisms that caused it to explode, and the heavy elements created in the process. In fact, these events create most of the cosmic elements that go on to form new stars, galaxies, and life. Now, using Berkeley Lab’s CASTRO code and supercomputers at the National Energy Research Scientific Computing Center, researchers simulated the 3D physics of superluminous supernovae for the first time ever.

[Click here to read more about how scientists have simulated superluminous supernovae and how these simulations can give them insights into the physics behind these events.](#)

NEWS CENTER

The Office of Science posted 79 news pieces between 4/20/2020 and 5/3/2020, including 27 university articles and 28 pieces from the labs and user facilities.

Comcast is using a network diagnostic and performance measurement tool developed by the [Energy Sciences Network](#) (ESnet) and Berkeley Lab to help ensure its services remain up and running during the COVID-19 crisis.

A team including researchers at the [Joint Genome Institute](#) has sequenced and assembled the genomes of the five major lineages of cotton. Studying the cotton genome can provide insight on crop improvements at a genetic level.

A team of scientists from [SLAC National Accelerator Laboratory](#) and Stanford University has come up with a way to improve electron bunches and produce brighter X-ray beams.

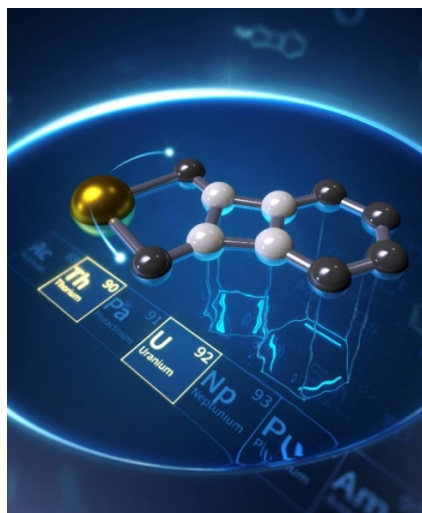
Researchers at the [University of Chicago](#) and Argonne National Laboratory are racing to find and study the antibodies that could be used to fight COVID-19.

A team led by [UC Riverside](#) researchers have found tiny satellite galaxies of the Milky Way that can be used to test the fundamental properties of dark matter. Researchers studied the evolution of these galaxies to explain diverse dark matter distributions.

Researchers from the [University of Maryland](#) developed a way to mix “unmixable” metals, a method that could allow scientists to create new materials with applications in catalysts, biological applications, and magnetic materials.

SCIENCE HIGHLIGHTS

The Office of Science posted new highlights spotlighting BES between 4/20/2020 and 5/3/2020.



Aromaticity and antiaromaticity are important concepts in organic chemistry, helping to define and explain how molecules vary in their stability and reactivity. Researchers previously identified these concepts together in organic biphenylenes. Researchers from the [University of Minnesota](#) have created metallic versions of these molecules that incorporate uranium and thorium.

IN THE NEWS

[The Hill: Universities are Leading the Charge to Combat COVID-19](#)

A researcher from Stony Brook University details university-led COVID-19 research in collaboration with Department of Energy national laboratories.

[Forbes: Why Supercomputers are a Vital Tool in the Fight Against COVID-19](#)

Berkeley Lab's Deputy Director for Research Horst Simon discusses the essential ways supercomputing can support COVID-19 research and solutions.

Scientific American: Antimatter Discovery Reveals Clues about the Universe's Beginning

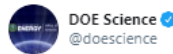
New evidence from neutrinos points to one of several theories about why the cosmos is made of matter and not antimatter.

TOP TWEETS

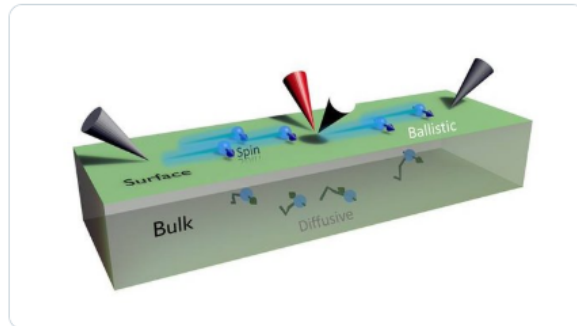
The Office of Science sent out 57 tweets between 4/20/2020 and 5/3/2020. Here are our two most popular from the past two weeks:



Science #PicOfTheWeek: @ORNL's Flora Meilleur prepares protein solutions for structural investigation with neutrons at the Spallation Neutron Source @ORNLNeutrons neutrons.ornl.gov/sns



Want a better topological insulator for quantum computing & information storage? @ORNL uses scanning tunneling microscopy to control the location of electrons on bismuth-based material energy.gov/science/bes/ar...



BY THE NUMBERS



The Department of Energy supports 28 [user facilities](#) at national laboratories, universities, and industry partners. The Office of Science has been profiling the directors of these facilities, the scientists who provide researchers with the most advanced tools of modern science including accelerators, colliders, supercomputers, light sources, and neutron sources. The most recent profile followed [Michael Papka](#), the director of the Argonne Leadership Computing Facility.

END NOTES

Video: SLAC joins the global fight against COVID-19



As part of the international response to the COVID-19 pandemic, [SLAC National Accelerator Laboratory](#) has re-opened some of its facilities for essential research on the atomic structure of the virus and how it interacts with potential treatments and vaccines. SLAC scientists are also leading the development of global standards to ensure reliable testing for the coronavirus, and they are participating in DOE working groups that are considering a wide range of proposals for coronavirus research, including high-throughput drug screening and novel approaches for building ventilators.

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