

Studying conditions of the early Universe

Searching for dark matter and cosmic neutrinos at the South Pole



Wright Laboratory

Probing the elementary building blocks of matter

Searching for new forms of matter

Listening to whispers of the Big Bang

Probing neutrinos in the coldest cubic meter of the Universe

Yale

Wright Lab Transformed



Yale

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The New Wright Lab

Wright Lab is advancing the frontiers of fundamental physics through a broad research program in nuclear, particle, and astrophysics that includes precision studies of neutrinos, searches for dark matter, investigations of the building blocks and interactions of matter, and observations of the early Universe. Wright Lab has been transformed to house a unique combination of state-of-the-art research facilities, technical infrastructure, and interaction spaces. The new laboratory provides critical research support to develop novel scientific instrumentation, and to build and conduct experiments exploring the physics of the visible and invisible Universe. Wright Lab offers training and hands-on research opportunities for the next generation of scientists.



Searching for new forms of matter

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Our Mission

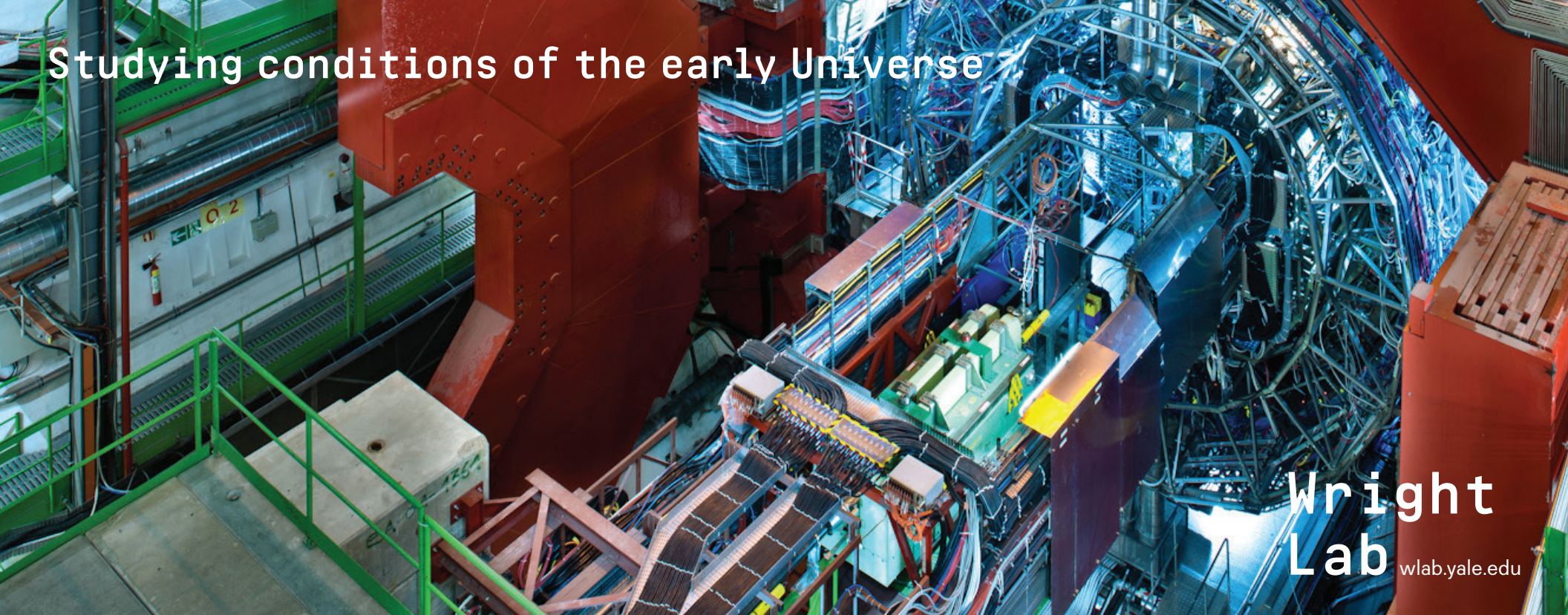
Advance our understanding of the Universe from the smallest particles to the largest scales through a broad research program at the intersection of nuclear, particle, and astrophysics.

Educate and train future leaders in research and instrumentation development through a vibrant scientific program including seminars, topical workshops, and summer programs.

Collaborate to provide instrumentation, expertise, and facilities for the design, construction, and operation of experiments based at Wright Lab and other locations worldwide.

Enable the development of novel instruments for fundamental physics by partnering with technical experts from universities, national laboratories, and industry.

Create scientific opportunities through multidisciplinary investigations, bringing together researchers and technical experts across campus and worldwide.



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Physics at Yale: A Tradition of Firsts



Arthur Williams Wright earned the first science Ph.D. to be awarded in the New World. Wright spent most of his scientific career at Yale University. His research, which ranged from electricity to astronomy, included experiments with Röntgen rays that produced the first X-ray image. Yale's original Sloane Physics Laboratory, the first dedicated physics lab building in the United States, was built to Wright's design under his direction.

In the mid-1960s, the development of Tandem Van de Graaff accelerators revolutionized nuclear physics. Pioneered by D. Allan Bromley, founding

director of Wright Lab, the first of these machines was built at the Wright Nuclear Structure Laboratory, ushering in the era of heavy ion nuclear science.

In the 1990s a broad new suite of advanced instrumentation boosted research capabilities, leading to discoveries of nuclear quantum phase transitions and to advances in nuclear astrophysics.

Starting in 2013, Wright Lab was transformed. The state-of-the-art facilities and new research directions confront today's most fundamental questions in physics.



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Facilities for Research, Education and Innovation

The Wright Laboratory has been transformed to support research in fundamental physics and to provide shared facilities for instrumentation development, experimental investigations, and student training. This includes investigator laboratories, specialized prototyping and fabrication shops, meeting spaces, a remote operations room, and high-bay areas for instrument assembly and testing.

Supporting technical developments

Wright Lab supports the training of students and researchers in CAD-based design and machining, and provides facilities for rapid prototyping and the fabrication of large-scale instrumentation.

Fostering synergies and collaboration

Interaction spaces, meeting rooms, and a vibrant program of visitors enables the development of new collaborations across campus and around the world.

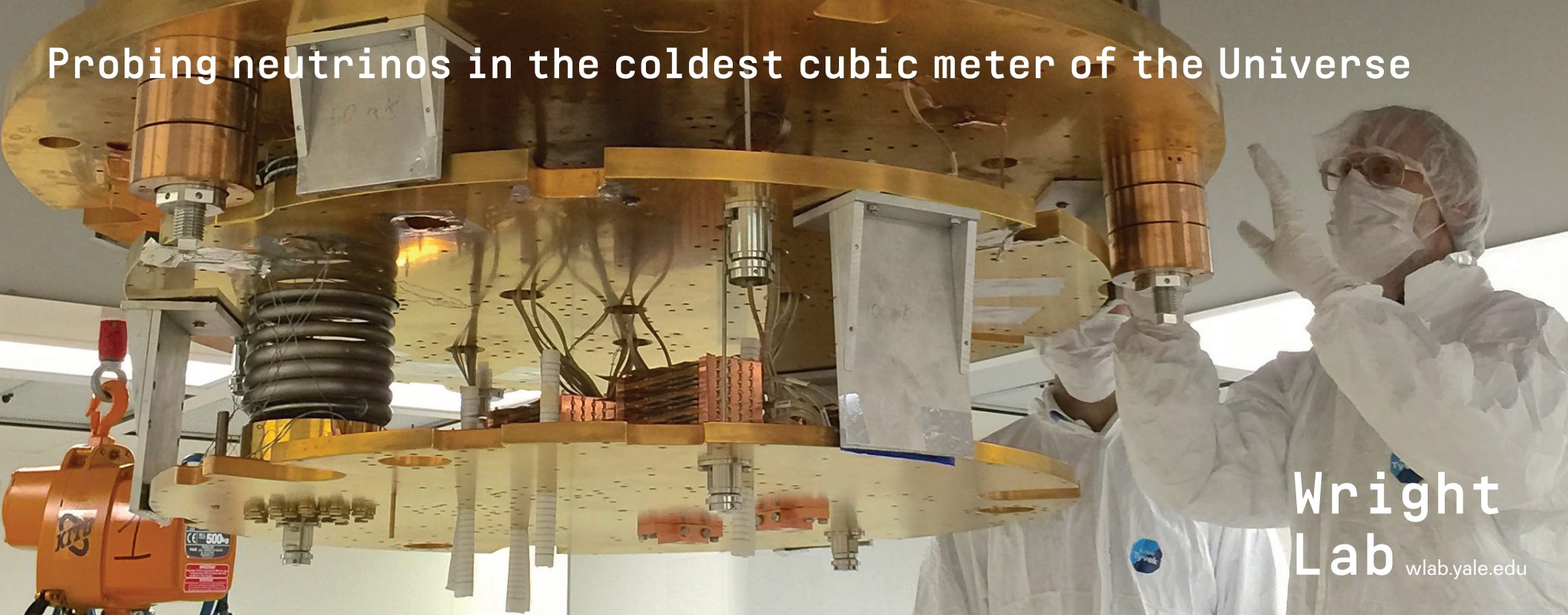
Training future leaders of the field

Young scientists experience hands-on research, mentoring, and specialized training to prepare for careers in research, industry, and education.

Enabling fundamental research

Close collaboration of scientists, technical staff, and subject experts creates new synergies that stimulate technical advances and scientific breakthroughs.

Probing neutrinos in the coldest cubic meter of the Universe



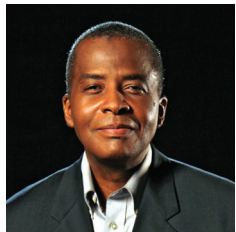
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Wright Lab Faculty

Wright Lab faculty pursue groundbreaking research in nuclear, particle, and astrophysics. They educate and mentor students, and train the next generation of scientists. They are leaders in instrumentation development, precision measurements, and the analysis and interpretation of experimental data and observations. Wright Lab faculty collaborate with colleagues across campus and around the world to answer fundamental questions about the building blocks of matter and the evolution of the Universe.

Photos and names of faculty on reverse.

Wright Lab Faculty



Keith Baker



Charles Baltay



Helen Caines



Richard Casten



Sarah Demers



Bonnie Fleming



Jack Harris



John Harris



Karsten Heeger,
Director



Franco Iachello



Steve Lamoreaux



Reina Maruyama



David Moore



Laura Newburgh



Peter Parker



Paul Tipton

Wright Lab Research Worldwide

Wright Lab scientists collaborate with colleagues across campus and with experts at research facilities around the world to study the properties of matter and to learn about the visible and invisible Universe. Our research groups develop novel instrumentation that is designed and built at the Wright Laboratory, and deployed and operated on campus, in laboratories deep underground, at accelerators, near reactors, or in astrophysical observatories. Wright Lab offers research and training opportunities on campus and at experimental facilities throughout the US, as well as at locations overseas.

Wright Lab researchers conduct experiments in 8 countries on 6 continents.

See reverse for locations.

Wright Lab Research Worldwide



1 University of Washington, WA 2 Dominion Radio Astrophysical Observatory, Canada 3 Waste Isolation Pilot Plant, NM 4 Sanford Laboratory, SD 5 Fermilab National Laboratory, IL
6 Oak Ridge National Laboratory, TN 7 SNOLAB, Ontario, Canada 8 Yale Wright Laboratory, CT 9 Brookhaven National Laboratory, NY 10 Simons Observatory, Chile 11 South Pole, Antarctica
12 CERN, Switzerland 13 Gran Sasso National Laboratory, Italy 14 Klerefontein, SA 15 Daya Bay, China 16 Yangyang, Korea