

School of Mines News

South Dakota School of Mines & Technology
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FOR IMMEDIATE RELEASE

SD Mines Awarded \$1.1 Million by Department of Energy for Underground Physics Research

RAPID CITY, S.D. (Feb. 3, 2015) – A newly formed physics research group at the South Dakota School of Mines & Technology is poised to make significant contributions to dark matter and neutrino oscillation experiments funded with a \$1.1 million grant from the U.S. Department of Energy (DOE).

The DOE's Office of High Energy Physics announced the award recommendation as part of its Cosmic Frontier and Intensity Frontier research programs. The award will be distributed over a three-year period beginning in April.

SD Mines physicists collaborate with scientists from throughout the world in several underground research experiments being conducted at the Sanford Underground Research Facility (SURF) in Lead and are involved in ultra-sensitive experiments at other laboratories in the United States and Canada.

“Underground physics experiments promise the possibilities of revealing the behavior of the neutrino and the nature of dark matter that makes up 80 percent of the universe by mass,” said Richard Schnee, Ph.D., one of the lead SD Mines underground researchers.

At SURF, physicists collaborate on the Large Underground Xenon (LUX) experiment, as well as the planned next-generation LUX-ZEPLIN (LZ) experiment, and the Experiment at the Long Baseline Neutrino Facility (ELBNF).

The new Department of Energy award will allow the university to lead work on calibrations, analysis and reducing backgrounds due to radon daughters and dust. Improved calibrations are critical to the success of the experiments.

Research for the experiments is being conducted at the SD Mines campus, as well as on site at the laboratories.

Specifically, in the Intensity Frontier program, the funding will support the current NOvA and future ELBNF neutrino oscillation projects. In the Cosmic Frontier area, it will support the current LUX and Super Cryogenic Dark Matter Search (CDMS) Soudan dark matter experiments, and especially their next phases, LZ and SuperCDMS SNOLAB.

Along with Schnee, other new faculty researchers are Luke Corwin, Ph.D., Juergen Reichenbacher, Ph.D., and Frank Strieder, Ph.D.

“Over the past two years, Mines has hired four new faculty members to support our new Ph.D. in physics. We are aligning our research program to take advantage of the tremendous capability the Sanford Underground Research Facility affords South Dakota,” said Heather Wilson, president of the School of Mines. “We’re very proud of the research team assembled at the university and very excited about the future of physics research here at Mines.”

SD Mines is involved in both of the next-generation underground dark matter experiments the Department of Energy and the National Science Foundation approved in July to move forward.

Schnee and Reichenbacher are active members of the LZ experiment team. Mines astrophysicist Xinhua Bai, Ph.D., has been involved in both the current LUX project and LZ, including serving on the LUX executive board. Schnee is a member of the SuperCDMS SNOLAB collaboration, the other next-generation underground dark matter experiment. Corwin is a member of NOvA, while Bai, Corwin, and Reichenbacher are members of the ELBNF experiment. Strieder is principle investigator of the Compact Accelerator System Performing Astrophysical Research (CASPAR) project at SURF.

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About SDSM&T

Founded in 1885, the South Dakota School of Mines & Technology is a science and engineering research university located in Rapid City, S.D., offering bachelors, master’s and doctoral degrees. The university enrolls 2,798 students from 45 states and 39 foreign countries, with a student-to-faculty ratio of 14:1. The SD School of Mines placement rate is 98 percent, with an average early career salary for graduates of \$65,600, according to the 2014-2015 PayScale report. Find us online at www.sdsmt.edu, on Facebook at <https://www.facebook.com/sdsmt> and on Twitter at <https://twitter.com/sdsmt>.