Berkeley lab to help construct mile-deep facility

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Space science is going underground, and Lawrence Berkeley Laboratory is leading it there, with the construction of the deepest lab on earth.

The new science and engineering research facility will be more than a mile deep in the earth's crust at the Homestake Goldmine in the Black Hills near Lead, S.D, the site of the largest gold deposit discovered in the Western Hemisphere.

The Homestake proposal was led by the Berkeley lab, UC Berkeley and the South Dakota School of Mines and Technology and chosen by the National Science Foundation from among four finalists.

The underground lab will provide shelter for experiments that need to be shielded from cosmic rays and background radiation, such as work on the elusive subatomic particle known as a neutrino. In addition to particle physics and astrophysics experiments, geology, geoengineering and microbiology research will benefit from the subsurface lab.

Two levels will be constructed, one at 4,850 feet below the surface, the other at 7,400 feet, capitalizing on the 375 miles of existing tunnels and 8,000-foot depth of the abandoned mine.

"Our plans also include a near-surface facility with drive-in access for experiments that require only modest shielding," Berkeley lab physicist Kevin Lesko, who led the proposal, said in a statement Tuesday.

Lesko said that to study neutrinos, beams of the particles will be sent through nearly a thousand miles of rock from Fermilab near Chicago to detectors in the Homestake lab.

Scientists will also study groundwater movement, extremophile organisms that live deep in the crust and the potential for storing greenhouse gases underground.

The lab will be named the Sanford Underground Science and Engineering Laboratory after First Premier Bank owner Denny Sanford, who donated $70 million to the project.

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