



Record numbers at Neutrino Day



One popular kids activity used the copper from pennies to electroplate nickels.



South Dakota Public Broadcasting's "Science" Steve Rokusek explains how the eye works.



Harry Nelson was the day's first speaker at the Opera House.

Editor's Note: We are very grateful for the generous support of our sponsors. Without them, Neutrino Day would not be possible. Please take a minute to read about them at sanfordlab.org/neutrinoday/sponsor.

As the temperature soared Saturday, so, too, did the number of visitors attending Neutrino Day activities in Lead. As Sanford Lab celebrated 50 years of science, more than 1,800 people attended activities and presentations, shattering the record of 1,100 set two years ago.

Many started the day at the lab with a hoistroom tour, one of the most popular activities of the day. Visitors also saw "wild science" experiments with South Dakota Public Broadcasting's Steve Rokusek, watched demonstrations of a solar powered water pump, learned about water treatment, looked at sunspots using a solar telescope, and got a taste of the MAJORANA experiment through the "glove box" demonstration.

Jim Dunn, who worked in public and government affairs at Homestake Mine for many years and helped document the building of Ray Davis' solar neutrino experiment, "had a wonderful day," his daughter Sue Dunn said. "He loved visiting with the scientists, hearing updates and reliving fond memories of Homestake."

Downtown, children and adults did hands-on activities, participated in videoconferences with scientists underground and at Fermilab, and watched presentations

about world-leading research into neutrinos and dark matter (see more about the speakers on Page 2).

Activities included markerbots, an engineering design activity; "Move the LUX"; Rutherford scattering, which focuses on understanding the structure of very tiny particles like atoms; and electroforming demonstrations. At the Opera House Smart Center, the Davis-Bahcall Scholars demonstrated lasers and a cloud chamber. Activities were hosted by Black Hills State University, South Dakota School of Mines & Technology and Tennessee Tech.

"Everything went really well," said Peggy Norris, Deputy Director of Education and

Outreach. "People enjoyed the events very much. A teacher from Rapid City brought students, who participated in several events. She said it was 'terrifically awesome.'"

New this year was the new Sanford Lab Homestake Visitor Center, which opened June 29. Visitors viewed exhibits, watched geology demonstrations and participated in videoconferences with scientists underground and at Fermilab in Batavia, Ill.

Mike Headley, Executive Director of the South Dakota Science and Technology Authority, said, "I'm so proud of the SDSTA staff, our partners, and all the volunteers who made this our best Neutrino Day yet."

Neutrino Day goes national

This year Neutrino Day went national with video connections to Fermilab in Batavia, Ill., and the North Carolina Museum of Natural Science in Raleigh.

Audiences at the new Visitor Center talked with Fermilab scientists about underground neutrino experiments.

Later, MAJORANA scientists on the 4850L connected to the museum in Raleigh. "We had a lively Q&A and many people asked to do the event again next year," said Dr. Rachel Smith, Head of the Astronomy & Astrophysics Research Lab at the museum.



The ‘Homestake Mine’

New to this year’s Neutrino Day was the premiere of the “Homestake Mine,” a musical piece written and conducted by Jesse Dunaway, a music major at Black Hills State University. Dunaway created the piece after a trip to Sanford Lab and the Davis Campus.

“I was so taken by how much culture surrounded the space,” he said. “For the people who lived here and worked in the mine, it was a way of life. Today, it’s about top scientific research. That’s what I tried to highlight.”

Jim Dunn, a long-time employee at Homestake Mine, said, “This young student captured the heart and spirit of the mine’s past and what the future holds.”

The piece received a standing ovation from a nearly full house. “I was thrilled that people got so much out of it,” Dunaway said.



Jesse Dunaway (right) conducts “Homestake Mine” at the Historic Homestake Opera House.



Photo by Matt Kapust

Speakers pack Opera House

It wouldn’t be Neutrino Day without science talks—this year three speakers captivated audiences, who had a host of questions following each presentation.

Keynote speaker, Dr. Ray Jayawardhana (at left), gave a tribute to Davis’ neutrino research during his presentation, “Neutrino Hunters: Chasing a Ghostly Particle to Unlock Cosmic Secrets.” Jayawardhana focused on research into neutrinos, but also on the men and women who put their reputations on

the line in the search for this “chameleon-like” particle.

The Dean of Science at York University in Toronto, was thrilled with the response. “This was an exceptionally engaged and curious audience.”

In “Touch the Dark,” Dr. Harry Nelson discussed the search for dark matter. Nelson is a professor at the University of California at Santa Barbara and a researcher with LUX.

Dr. Steve Elliott focused on the role neutrinos could play in understanding the origins of the universe in “Neutrinos,

Anti-Neutrinos and the Question, ‘Why are we Here.’” Elliott is a researcher at Los Alamos National Laboratory and the spokesperson for MAJORANA.

After a tour of the 4850L Jayawardhana said, “It was a privilege to be where Ray Davis began his pioneering and Nobel-winning work. I was captivated not only by the incredible history, but by the frontier science happening now and the exciting plans for the coming decade.”

Guess who came to the Lab

Sanford Lab staff, scientists and special guests were in for a real treat when Buzz Aldrin, the second man to walk on the moon during the 1969 Apollo 11 mission, walked into the Davis Campus. Aldrin asked many questions about the experiments and the future of Sanford Lab.

During a talk later that day at the South Dakota School of Mines & Technology, Aldrin said his favorite thing about South Dakota was “a big hole in the ground,” referring to Sanford Lab.

“We appreciate Buzz Aldrin taking the time to visit the Sanford Lab and sharing his enthusiasm for science and technology,” said Mike Headley, Executive Director of the SDSTA.



Photo by Matt Kapust

Those working at the Davis Campus pose with Buzz Aldrin (center in the Mars t-shirt) for a group photo. If you are in this photo [tag yourself on Facebook](#).