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Outside teachers train in Fairbanks for Antarctic trips

By Chris Freiberg
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FAIRBANKS — A group of high school science and math teachers who could help unlock the secrets of the universe were in Fairbanks last week.

The five teachers, who come from all over the Lower 48 as part of the Knowles Science Teaching Foundation, were training for the construction of the IceCube Neutrino Observatory, a telescope located at the South Pole that will be made out of ice more than a kilometer deep.

The telescope, which will consist of thousands of sensors embedded in the ice, will not actually see into space like a traditional telescope when it is completed in 2010 or 2011, but it will detect tiny space-borne particles known as neutrinos as they harmlessly pass through the Earth. Tests performed at the laboratory could give scientists a better understanding of dark matter, a substance that makes up maybe a quarter of the matter in the universe, though researchers don't really know what it is.

As part of their training in Fairbanks this week, the teachers visited the Army's permafrost tunnel and took classes about how to use satellite phones and survive the harsh climate of Antarctica, where temperatures can reach 100 degrees below zero in the winter.

Jim Madsen, a physics professor from the University of Wisconsin at River Falls, has been part of the research team planning the telescope's design. He has done research in Antarctica and was on hand to give advice to those heading there for the first time.

"If you've been on a frozen lake, the South Pole is like that," he said. "The South Pole is frozen and flat. There's no trees. There's nothing to see."

He said that when doing research at the South Pole, it's important to be prepared for anything from unforeseen changes in weather to equipment breakdowns.

And as for what he hopes the telescope to find, he said it could be anything.

"New things," Madsen said. "it sounds strange, but it's like going to North America for the first time. You couldn't tell them to look for buffalo. Nobody has built a telescope with this capacity."

Casey O'Hara, a high school teacher from San Francisco, will be heading to the South Pole in about 10 months to work on a cosmic ray detector on the surface of the ice. At that time, it will be summer at the pole, meaning he'll have to deal with temperatures of 30 below and 24 hours of sunlight.

"Personally, yeah, I'm going to try and compensate with a T-shirt over my face to sleep," said Katey Shirey, a Virginia high school teacher who will head to Antarctica in late 2010.

While the research station at the South Pole is remote, it still is reasonably well-connected to the rest of the world via satellite phone and the Internet. O'Hara intends to stay in contact with his students with an online journal.

"It's definitely going to be colder, drier and a higher altitude." O'Hara said. "With the wind and temperatures, it's one of the most extreme places in the world."

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