THE BEACON NEWS

IMSA discussion: from dark matter to extra dimensions

By Nancy Strunk Kirby

For The Beacon-News

Last Modified: May 13, 2012 08:11AM

AURORA — What is the nature of dark matter and dark energy? Is Einstein's theory of gravity wrong? Is there a "supersymmetry" in nature that makes extra dimensions of space possible?

Students from the Illinois Mathematics and Science Academy lined up to ask these and other heady questions to a panel of Fermilab physicists during a question-and-answer session in the school's main gym this week.

The panel discussion served as the culmination of the Inaugural Leon M. Lederman Frontiers of STEM Symposium. STEM (Science, Technology, Engineering and Mathematics) is a hallmark of the IMSA educational mission. The symposium was also sponsored by the IMSA Great Minds Program, launched in 1998 by IMSA founder, resident scholar, former Fermilab director and Nobel laureate Leon Lederman.

The day-long event took place on IMSA's Aurora campus, and eight students traveled off campus to present their research to scientists at Fermilab in Batavia and Argonne National Laboratory near Lemont.

Wide-ranging discussion throughout the day included thought-provoking questions — and answers — on physics topics such as neutrinos, string theory and the elusive Higgs boson particle, thought to be responsible for the generation of mass of all the fundamental particles.

Serving on the panel were John Peoples, director emeritus of Fermilab, who has been active in the lab's scientific program for 40 years; Scott Dodelson, scientist at Fermilab and professor in the Department of Astronomy and Astrophysics at the University of Chicago; and Marcela Carena, senior scientist at Fermilab and an expert in particle physics.

Lederman, who sat in the front row for the presentation, was acknowledged numerous times by the panelists for his ground-breaking physics research at Columbia University and Fermilab. He served as the director of Fermi National Accelerator Laboratory from 1979 to 1989 and was awarded the Nobel Prize in Physics in 1988.

With physics theory discussion seemingly providing more questions than answers, students also posed queries about the practice and ethics of science. They asked about how to acquire grant funding and whether scientists should be politically active in advancing research that will benefit society but may be controversial.

“I think we should never apologize for following our curiosity and pursuing it with all our might,” Peoples said.

In response to a student question about the importance of speaking multiple languages as an international scientist, Carena, who was born in Buenos Aires, Argentina, said she learned five languages as young child and that she still speaks several fluently.

“For me, physics has opened many doors to different cultures and different values that are different from my original culture,” she said. “That’s something I am thankful for and that has made me a richer person.”

In closing remarks, IMSA President Glenn W. “Max” McGee echoed the comments of the panelists who told students that new frontiers in the ever-evolving world of physics will belong to them.

“We need goals and challenges that are about passion,” McGee said.
