

Physics Colloquium

Michigan Technological University

Tuesday, November 4, 2008

11:00 am

Room 138, Fisher Hall

Measuring, Mapping, and Understanding the High Energy Universe with Milagro and HAWC

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Abstract: High-energy gamma rays are produced in the most extreme astrophysical environments in the Universe, like super nova remnants, super-massive black holes, neutron stars, or in the interaction of high-energy cosmic rays with matter and radiation inside and outside our Galaxy. By studying the gamma radiation from these objects we can probe the physical processes that occur in the presence of extreme gravitational fields. The Milagro Observatory in the Jemez Mountains near Los Alamos surveyed large regions of the Northern Hemisphere sky and discovered new sources of TeV gamma rays and diffuse emission from the plane of the Milky Way Galaxy. I will discuss these results and I will describe future prospects for high-energy gamma-ray astronomy with a next generation Milagro-like telescope in preparation in Mexico, called the HAWC (High Altitude Water Cherenkov) observatory.

Biography: I received my PhD from the University of Hamburg/DESY, Germany, in 2001 working in particle physics on the OPAL experiment at CERN, Switzerland. From 2002 to 2006, I did post-doctoral research at the University of Utah working with the HiRes/FLASH experiments in cosmic-ray physics. Since 2006, I have been working as a post-doctoral research associate at Los Alamos National Laboratory. My main interest lies in the measurement of gamma-ray emission from the plane of the Milky Way Galaxy and in understanding the origin of high-energy cosmic rays through this measurement.

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