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WEEKLY CALENDAR

November 8, 2010

Departmental Colloquium

Wednesday, 3:40 PM, November 10, 2010
109 Nicholson Hall

"Development of our Successful Linac-MR System for Real-Time MR-Guided RT"

Gino Fallone
University of Alberta, CANADA

Host: Kenneth Hogstrom

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

Mutual Interference issues that have hampered linac-magnetic resonance imaging (MR) integration in the past are discussed and resolved in our successful prototype. Problems of patient dosimetry within a magnetic field are resolved within our novel design and presented to develop safe whole-body real-time MR-guided radiotherapy (RT). Discussion of our present status in this area is presented.

Departmental Colloquium

Thursday, 3:40 PM, November 11, 2010
109 Nicholson Hall

"The Fermi/LAT Mission After 2 Years"

Troy Porter
Stanford University

Host: Jim Matthews

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

The Large Area Telescope (LAT), one of two instruments on the Fermi Gamma-Ray Space Telescope (formerly GLAST, launched June 11, 2008), is a pair conversion detector designed to study the gamma-ray sky in the energy range 20 MeV to > 300 GeV. The greatly improved sensitivity of the LAT compared with its predecessor experiment, EGRET on the Compton Gamma-Ray Observatory, coupled with the uniform and deep sky coverage, and lack of consumables, provides a unique capability for studying the gamma-ray Universe. A menagerie of gamma-ray sources exists: within our own Galaxy pulsars, X-ray binaries, supernova remnants, and molecular clouds are a few examples. The propagation of cosmic rays in the Galaxy produces diffuse gamma-ray emission through interactions with the interstellar gas and radiation fields, and is the bright background against which the sources are detected. Diffuse gamma-ray emission is also expected from similar processes in the solar system and nearby galaxies, such as the Large Magellanic Cloud (which was detected by EGRET). The extragalactic gamma-ray sky is dominated by emission from blazar active galactic nuclei that are highly variable, and gamma-ray bursts, and perhaps exotic processes that may contribute to the extragalactic gamma-ray background. The LAT has detected many gamma-ray sources and the diffuse emissions of the Milky Way with unprecedented sensitivity and resolution. I will give an overview of the instrument and status, and results obtained on some of these topics after 2 years the Fermi/LAT mission.