



# DEPARTMENT of PHYSICS

## Fay Ajzenberg-Selove Colloquium

Friday, April 16, 2010 • 4:00 P.M. • 2241 Chamberlin Hall

cookies & coffee served at 3:30 p.m

# Dark Matter in the Universe



**Katherine Freese**

University of Michigan

One of the biggest unanswered questions in science is “What is the Universe made of?” Only 4% of the Universe consists of ordinary atomic matter; the remaining 96% is made of Dark Matter and Dark Energy whose nature is as yet unknown. This talk will examine the dark matter that comprises most of the mass of the Milky Way and all other galaxies. I will review the observational evidence for the existence of dark matter, and then turn to the hunt for the dark matter particle. A great deal of excitement currently pervades this field because of current and upcoming experiments that can find the dark matter, via both direct and indirect techniques. The best motivated dark matter candidates are Weakly Interacting Massive Particles such as those motivated by supersymmetry or extra dimensions. These particles have been powerful motivation for the Large Hadron Collider at CERN, underground experiments (e.g; XENON, CDMS), satellites such as GLAST or PAMELA, and neutrino detectors such as ICECUBE/DEEPCORE at the South Pole. The discovery of the dark matter particle will be an exciting milestone for particle physics, astrophysics, and for everyone interested in understanding the nature of our Universe.