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## Dynamical Dark Matter: A New Framework for Dark-Matter Physics

*Monday, 29 August 2011 14:30 (20 minutes)*

In this talk, I will present an alternative framework for dark matter physics in which the dark matter of the universe comprises a vast ensemble of interacting fields with a variety of different masses, mixings, and abundances. The constituents of this ensemble are not required to be stable individually; rather, the decay widths of these fields are balanced against their abundances in such a way that phenomenological viability is ensured. I will begin by discussing the general aspects of the dynamical dark-matter framework and some of its generic cosmological and astrophysical implications. I will then provide a simple, explicit model in which the dark-matter ensemble consists of the KK excitations of an axion-like field propagating in the bulk of a theory with large extra spacetime dimensions. In this model the correct relationship between decay widths and relic abundances arises naturally, and all phenomenological constraints can simultaneously be satisfied.

**Presenter:** Dr THOMAS, Brooks (University of Arizona)

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