

# JOINT TUFTS/MIT COSMOLOGY SEMINAR

---

*Is there a fundamental cosmic  
dipole?*

Leandros Perivolaropoulos  
University of Ioannina

LCDM, the standard cosmological model is consistent with the vast majority of cosmological observations. There is however a set of observations (anomalies) which are either marginally consistent or just inconsistent with the predictions of LCDM. These may be the first indicators of the upcoming next standard model as was the case with the early indications that lead to LCDM in the 90s. After reviewing this set of observations I point out a key common feature they have: They hint towards a breaking of large scale statistical isotropy/homogeneity. The lowest order quantitative measure of such a breaking is a cosmic dipole. I then briefly discuss a few theoretical models that could lead to such a breaking and focus on one of the them 'Topological Quintessence'. This model is based on the recent formation of a Hubble core size global monopole (or other defect). Such a defect would naturally produce dark energy with Hubble scale inhomogeneity. The model smoothly reduces to LCDM for a large enough global monopole core and is an extension of the well known model of 'Topological Inflation'. I discuss how could an off center observer, observe the 'anomalies' that challenge LCDM in the context of such a model.

Tuesday, September 10, 2013, 2:30 pm  
Robinson Hall, Room 250  
Tufts University

Refreshments at 2:00 in Knipp Library, Room 251