

Cosmology Seminar

Dr. Charles Keeton
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Title: A new channel for detecting dark matter substructure in galaxies

Abstract: The Cold Dark Matter paradigm predicts that galaxy dark matter halos contain hundreds of bound subhalos left over from the hierarchical galaxy formation process. Testing this prediction provides unique access to the astrophysics of galaxy formation on small scales, and perhaps even the fundamental nature of dark matter. Gravitational lens flux ratios have been used to place the first constraints on dark matter substructure in galaxies out to redshift $z \sim 1$. Now I propose to open a new frontier in substructure studies with gravitational lens time delays. Time delays offer several distinct advantages. The theory of "time delay millilensing" is rich and tractable. Time delays provide access not only to the total amount of substructure, but also to the distribution of subhalo masses. Good data are attainable now, and future large samples will allow us to measure substructure as a function of galaxy mass, redshift, and environment.

Thursday, 12:10 - 1:30PM - Room 416 PHY/GEO