



PHYSICS AND ASTRONOMY SEMINAR

Dr. Jeff Dror
UC Berkely

“Pulsar timing as a probe of primordial black holes and subhalos”

Abstract

"Pulsars act as accurate clocks, sensitive to gravitational redshift and acceleration induced by transiting clumps of matter. In this talk, I study the sensitivity of pulsar timing arrays (PTA) to transiting compact dark matter objects, focusing on primordial black holes and subhalos. Such dark matter clumps can result in different classes of signals observable in pulsar timing experiments depending on the mass of the object. I will classify the types of signals, where they are most important, and the different search strategies resulting in possible constraints over a huge mass range, 10^{-12} to 100 solar masses. Crucially, PTAs offer the opportunity to probe much less dense objects than lensing experiments due to the large effective radius over which such objects can be observed with a single pulsar. We project the reach possible with current and future pulsar timing experiments, with sensitivity to a dark matter sub-component reaching the sub-percent level over significant parts of this range with future detectors."

Tuesday, February 05, 2019

1:00 p.m.

HSD Building – Room A250