



# PHYSICS AND ASTRONOMY SEMINAR

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### Characterizing Anisotropy in the Gravitational Wave Background with Pulsar Timing Arrays

#### Abstract

Pulsar Timing Arrays are currently the only way to search for gravitational radiation in the nanohertz band. The main sources of interest are gravitational wave backgrounds generated by supermassive black hole binaries or processes in the early universe. Several limits on this background have been set in recent years and searches of increasing sensitivity are currently ongoing. All the searches so far have only been done for isotropic backgrounds. However, a level of anisotropy may be present in the background radiation, and if a stochastic signal is detected it is important to characterize its power at different angular scales. We decompose a generic anisotropic background into spherical harmonics and compute and characterize the overlap reduction functions for any pulsar pair, which is an essential element for the evaluation of the likelihood function used in searches.

Tuesday, January 28, 2014

1:30 p.m.

Elliott Building

Room 061