

Friday, February 12, 2016**4:10 – 5:00 PM****EPS 103****Rapid Multi-messenger Astronomy with Gravitational-Wave Interferometers****Christopher Pankow****Postdoctoral Associate****Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA)
and the Department of Physics & Astronomy
Northwestern University****Abstract:**

The first observation runs with second generation gravitational-wave observatories will conclude at the beginning of 2016. Given their unprecedented and growing sensitivity, the benefit of prompt estimation of the physical parameters, orientation, and sky localization of binary coalescences is obvious not only in confident detection and event population studies, but also in its coupling to electromagnetic astrophysics and observations. Conventional schemes to measure properties of compact object binaries are primarily Bayesian and Markovian. While very successful, in some cases convergence can complete well after the electromagnetic fluence has subsided thus diminishing the potential science return. With this in mind, I have developed a novel scheme which is Bayesian and simply parallelizable across all available computing resources, drastically decreasing convergence time to few tens of minutes. In this talk, I will review the current status of LIGO observations, emphasize the efficient and complementary use of low latency gravitational-wave searches for potential electromagnetic counterparts, and demonstrate the capabilities of our parameter estimation framework in the context of binary neutron star and neutron star / black hole coalescence. I will conclude with recent developments in expanding of the framework to measure other quantities such as tidal parameters and component object spins.

Host: Katerina Chatziioannou***** Refreshments served in the EPS second floor atrium at 3:45 *****