



Columbia University Physics Department Particle Seminar

Wednesday, April 4, 2007

1:00 PM

705 Pupin Hall

Panning for gravitational gold: status and prospects for the search of gravitational wave events in the LIGO data stream

The Laser Interferometer Gravitational-wave Observatory (LIGO) has been collecting data at design sensitivity with its three km-scale interferometers since November 2005. The LIGO Scientific Collaboration is currently sifting through this data stream, looking for "gold plated" gravitational wave signatures. In this talk I will describe ongoing efforts in the search for transient events, with duration from a few milliseconds to a few seconds in the LIGO sensitive band. Plausible sources for such events are coalescences of compact binary systems and supernova explosions; other still unmodeled sources could also be waiting to be discovered in the gravitational wave sky. While matched filtering can be used to extract a known waveform from the noise (for instance, the inspiral and ringdown phase of a binary coalescence), more general approaches combine data from multiple interferometers, either incoherently or coherently, and impose tight coincidence requirements across detectors for a detection. I will outline the challenges facing these analyses, report on their performance and preliminary results and discuss future prospects.

Speaker: Laura Cadonati

(MIT, LIGO Scientific Collaboration)

Hosted By: Szabi Marka

