

CU Physics Department Particle Seminar

Wednesday, October 17, 2007 705 Pupin Hall 1:00 PM



"Opening a new window to the universe:"

Present astrophysical results and the predicted reach of advanced LIGO detectors"

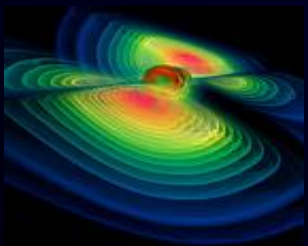
Direct detection of gravitational waves will provide not only a strong validation of the theory of general relativity but also a rich variety of astronomical information which is not available with other means of observations such as electro-magnetic radiation.

Laser Interferometer Gravitational wave Observatory (LIGO) is a network of three interferometric gravitational wave detectors built at two sites in the USA. LIGO successfully finished the fifth scientific observation run and it has accumulated more than one year of triple coincident observation data.

Those data have already produced a number of astrophysically interesting results by the LIGO Scientific collaboration institutions including the Columbia Experimental Gravity group.

LIGO is also planning an upgrade (Advanced LIGO), which shall be able to detect gravitational waves from thousands of times larger cosmic volume than current LIGO does.

In this talk, I will first give an overview of exciting public data analysis results from current LIGO data. Then I will introduce the concepts, scientific motivations and technical challenges of Advanced LIGO detectors. At the end I will describe and quantify some of the expected astronomical fruits from advanced detectors.



Yoichi Aso, Columbia University

