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THE UNIVERSITY of WISCONSIN MADISON

PHYSICS COLLOQUIUM

Gravitational Waves and Multimessenger Astrophysics

An Experimenter's Point of View

Szabolcs Marka

Columbia University

Host: Westerhoff

Abstract: Gamma-ray, X-ray, optical and neutrino observations of cataclysmic cosmic events with plausible gravitational wave emission can be used in combination with searches for gravitational waves. Information on the progenitor, such as trigger time, direction and expected frequency range, shall enhance our ability to identify gravitational wave signatures with amplitude close to the noise floor of the detector. Even in the absence of detection, the association of the astrophysical trigger with a particular source distance allows to interpret upper limits on the observed flux of gravitational waves in terms of the energy emitted in the form of gravitational waves. After introducing the science goals and operation of the Laser Interferometer Gravitational-wave Observatory (LIGO) I will summarize past multimessenger based gravitational wave searches and discuss the implications of existing results. I will close by giving an outlook on the future including proposed multimessenger searches with gamma-rays and high-energy neutrinos.

Hanford, Washington

Livingston, Louisiana

2241 Chamberlin Hall • Friday, November 7, 2008 • 4:00 P.M.

cookies & coffee served at 3:30 p.m.