ICFO Colloquium DAVID REITZE 'Listening for the Faint Traces of the Most Violent Events in the Universe Using the Laser Gravitational-wave Observatory'

DAVID REITZE

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Friday, September 4th, 12:00, ICFO's Auditorium

DAVID REITZE

He holds joint positions as the Executive Director of the LIGO Laboratory, Research Professor or Physics at the California Institute of Technology, and Professor of Physics at the University of Florida. $$ His research interests lie primarily in the area of gravitational wave detection using the Laser Interferometer Gravitational-wave Observatory. He is a Fellow of the American Physical Society and the Optical Society of America.

For more than 50 years, scientists have endeavored to detect gravitational waves astrophysical sources. Beginning in the 1960`s, a series of ever more sensitive instruments

were constructed to search for them. Alas, no gravitational waves have yet been found, in part because detecting a gravitational wave from a cosmic event requires the ability to measures strains (the physical manifestation of gravitational waves) to better than 1 part in 10^23.

With Advanced LIGO about to come online, we have strong reasons to believe that gravitational waves will soon be detected. In this colloquium I will discuss gravitational waves, what makes them so interesting and challenging to detect, and how Advanced LIGO will use really big interferometers to hunt for them. The operation of a gravitational wave interferometer relies on a broad array of disciplines, among them general relativity, precision stabilized lasers, classical and quantum optics, and the materials science of optical coatings to name just a few. Hopefully, there will be something in this talk for everyone.

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