

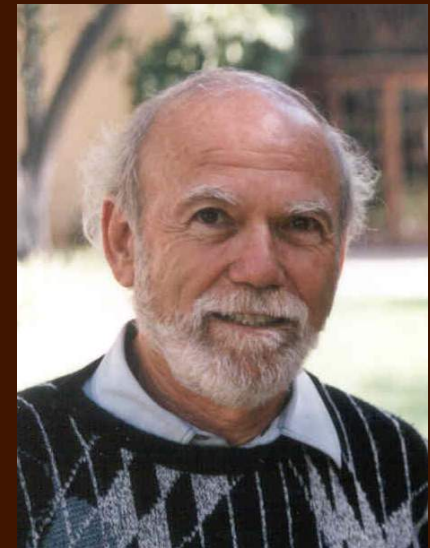
Physics Colloquium

Monday November 14th, 2005 4:15 PM
428 Pupin Hall

Professor Barry Barish of CAL Tech

“Probing the Universe for Gravitational Waves”

Albert Einstein predicted the existence of gravitational waves in 1916 as a consequence of his general theory of relativity. These waves remain to be detected, however, almost 100 years later. In Einstein's theory, concentrations of mass (or energy) warp space-time, and changes in the shape of such objects cause distortions that propagate through the Universe at the speed of light. The Laser Interferometer Gravitational-Wave Observatory (LIGO) is being developed with sensitivity that should be capable of the detection of gravitational waves resulting from such astrophysical sources as merging compact binary systems, spinning neutron stars, supernovae explosions and even cosmological sources. LIGO consists of two widely separated long baseline interferometers that can be used standalone or in coincidence. These sophisticated interferometers have been construction and the commissioning is well along. The detectors are already the most sensitive in the world and the first searches have been performed. I will discuss the science of gravitational waves, the technology and detector performance, the first upper limits, and finally the prospects for the future.



Host: Prof. Marka