University of Crete
Department of Physics

Physics Colloquium

Thursday, 12 February 2026 | 17:00 – 18:00, Seminar Room 3rd Floor

The First Ten Years of Gravitational-wave Astronomy

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ABSTRACT

In 2015, the Laser Interferometer Gravitational-Wave Observatory (LIGO) detected for the first time gravitational waves (GWs) from two merging stellar-mass black holes. This monumental discovery opened a completely new window to observe the universe, marking a new era for astronomy. In this talk, I will summarize the LIGO discoveries of the last decade, including the first multi-messenger detection of a binary neutron star, associated with a gamma-ray burst and a kilonova. In 2023, GW astronomy reached yet another milestone, with the discovery of the low-frequency GW background by pulsar timing arrays (PTAs). This signal is likely produced by an unresolved population of supermassive black hole binaries (SMBHBs) formed in galaxy mergers. I will discuss the astrophysical implications of this signal along with efforts of my group to deliver the first multi-messenger detection of a SMBHB resolved on top of this background.