Perugia Advanced Physics Seminars

A journey to the frontiers of knowledge

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Present and future of multi-messenger astronomy including gravitational-wave

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A new exploration of the Universe has recently started through gravitational-wave observations. On August 17, 2017, the first observation of gravitational waves from the inspiral and merger of a binary neutron-star system by the Advanced LIGO and Virgo network, followed 1.7 s later by a weak short gamma-ray burst detected by the Fermi and INTEGRAL satellites initiated the most extensive world-wide observing campaign which led to the detection of multi-wavelength electromagnetic counterparts. Multi-messenger discoveries are revealing the enigmas of the most energetic transients in the sky, probing neutron-stars physics, relativistic astrophysics, nuclear physics, nucleosynthesis, and cosmology. The talk will give an overview of the astrophysical implications of the gravitational-wave and multi-messenger observations, the prospects and challenges of the current and future gravitational-wave detectors.

The movie

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