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Radiative signals from GRBs and multi-messenger searches

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Gamma-ray bursts (GRBs) are short lasting flares of keV-MeV radiation. These extragalactic transients are produced in the ultra-relativistic jets produced after collapse of massive stars or merger of neutron stars. In the last decade we have witnessed extraordinary observations of GRBs, including joint GRB-gravitational wave (GW) detection and very-high energy (VHE) gamma-ray observations. More recently, the brightest of all the time GRB has been detected and followed up from the radio to VHE gamma-rays. In this talk I will first present the most recent multi-messenger and multi-wavelength observations of GRBs. I will then discuss the potentials of these observations in contribution to our understanding of physics of compact objects, relativistic jets and particle acceleration. And finally, a future prospects will be drawn for the next decade of GRB observations with GWs, VHE gamma-rays and high-energy (GeV-TeV) neutrinos.

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