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Search for GW in coincidence with burst sources during O3

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Multi-messenger astronomy is a vast and expanding field as electromagnetic (EM) observations are no longer the only way of exploring the Universe.

Due to the new messengers, astrophysical events with both gravitational waves (GWs) and EM emission are no longer a dream of the astronomical community.

A breakthrough for GW multi-messenger astronomy came when the LIGO-Virgo network detected a GW signal of two low-mass compact objects consistent with a binary neutron star (BNS, GW170817), an event that generated a short gamma-ray burst (GRB), and a kilonova. While GW170817 represents the testimony to BNS mergers being the progenitor of at least some GRBs, a wide range of highly energetic astrophysical phenomena is expected to be accompanied by the emission of GWs and photons. Here we present an unmodelled method to search for GWs having gamma and radio counterparts, using the LIGO/Virgo data and observations of partner telescopes. We also discuss the most recent results of the unmodelled coherent searches targeting astrophysical events during the first part of the LIGO-Virgo third observing run.

Auteur principal: TOSTA E MELO, Iara (INFN LNS)

Orateur: TOSTA E MELO, Iara (INFN LNS)

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