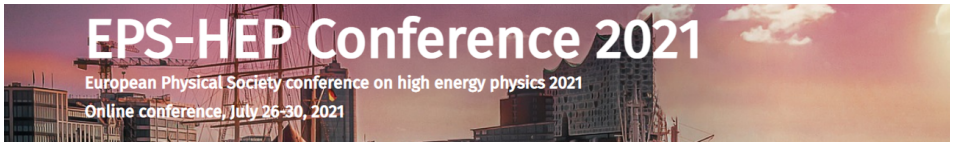

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Search for multi-messenger events during LIGO/Virgo era

Friday 30 July 2021 10:30 (20 minutes)

Multi-messenger astronomy is a vast and expanding field as electromagnetic (EM) observations are no longer the only way of exploring the Universe. This field had its dawn when new astronomical messengers of non-electromagnetic origin were observed: solar flare, neutrinos, and most recently the detection of gravitational waves (GWs) in 2015. Due to these new messengers, astrophysical triggers with both GWs and EM are no longer a dream of the astronomical community. A breakthrough for GW multi-messenger astronomy came when the LIGO-Virgo network detected a GWs signal of two low-mass compact ob- jects consistent with a neutron star binary (BNS, GRB170817), an event that generated a short gamma ray burst (sGRB), and a kilo-nova. While GW170817 represents the testimony for 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 EM. Here we present the unmod- elled method to search for GWs having gamma and radio counterparts using the LIGO/Virgo data and observations of partners'telescopes. We also discuss the most recent results of unmodelled coherent LIGO-Virgo searches targeting astrophysical triggers during the first part of the third observing run (O3a): (i) 105 gamma-ray bursts detected by the Fermi and Swift satellites, and (ii) fast radio bursts detected by CHIME. Finally, a summary of the prospects of unmodelled burst analysis for the second part of the third observing run (O3b) will be given.

Collaboration / Activity

Ego-Virgo

First author

Email

Primary author: TOSTA E MELO, Iara (LNS INFN - Uniss)

Presenter: TOSTA E MELO, Iara (LNS INFN - Uniss)

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