

Multi-messenger searches via IceCube's high-energy neutrinos and gravitational-wave detections of LIGO/Virgo

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- Gravitational waves (GWs) and neutrinos allow us to study astrophysical phenomena which can be inaccessible via traditional cosmic messengers.
- We present two analyses searching for common sources of GWs and high-energy neutrinos using GW information from LIGO-Virgo and neutrino data from IceCube.
- A low-latency pipeline was implemented for LIGO-Virgo's O3 observing run. This pipeline ran both neutrino follow up analyses on every public alert sent by LIGO-Virgo. The results were reported via GCN circulars with low-latency.
- No significant neutrino emission was observed from any GW event from the GWTC-1 and GWTC-2 catalogs, as well as the candidate events from the O3 run. We set upper limits on the time-integrated neutrino flux and total isotropic equivalent energy from each GW source.
- Published paper in Astrophysical Journal Letters with results from neutrino follow up of GW events reported in the GWTC-1 catalog
 - Aartsen et al., ApJL **898** L10 (2020)