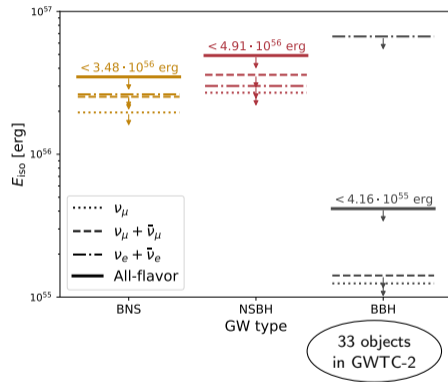


**Title:** Follow-up of GWTC-2 gravitational wave events with neutrinos from the Super-Kamiokande detector  
**Presenter:** Mathieu Lamoureux (INFN Padova and APC Uni-Paris) on behalf of the Super-Kamiokande collaboration

- ▶ Searching for neutrinos ( $\nu$ ) in time coincidence ( $\pm 500$  s) with gravitational waves (GW) from the newly released **GWTC-2 catalog** (LIGO-Virgo collaboration [LVC]).
- ▶ If a joint GW+ $\nu$  source is detected, it would greatly help *understanding the underlying mechanisms* (e.g. for binary neutron star merger and associated short gamma-ray burst).
- ▶ *Four different SK samples* have been considered, covering energies from 7 MeV to  $> \mathcal{O}(\text{TeV})$ .
- ▶ *No excess* with respect to expected background was observed and upper limits on neutrino emission have been obtained...  
 $\hookrightarrow$  including stacked upper limit on the equivalent isotropic energy  $E_{\text{iso}}$  in neutrinos from binary black hole mergers.

Results are detailed in [arXiv:2104.09196](https://arxiv.org/abs/2104.09196).



**Figure:** Stacked upper limits on  $E_{\text{iso}}$  for the different source population identified by LVC, assuming all objects emit the same energy.