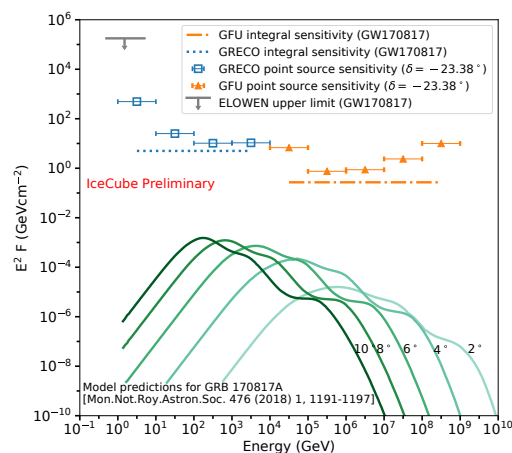


Gravitational Wave Follow-Up Using Low Energy Neutrinos in IceCube DeepCore

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- The goal is to search for neutrino counterparts with energies of 10-100s of GeV to gravitational-wave (GW) events detected by the LIGO-Virgo detectors.
- We use a dataset that uses the IceCube-DeepCore array for this purpose.
- We use an unbinned maximum likelihood method to search for neutrinos within a time window of ± 500 s centered around the time of the GW event.
- A hypothesis testing is performed to compare the signal and background-only scenarios. The hypothesis test also utilizes the information of the spatial probabilities obtained from the GW skymap.
- We present the calculated sensitivities (ν_μ) of the analysis to all 11 GW events observed during the O1 and O2 runs of LIGO-Virgo.
- A comparison of the sensitivity (ν_μ) of this analysis (GRECO) to other analyses within IceCube that conduct a follow-up of GW events is also done. This analysis complements the energy region scanned by other high energy (GFU) and very-low energy (ELOWEN) analyses within IceCube, as shown in the figure below.



- In the future, the sensitivities shown here will be updated for neutrino events of all flavours.
- These sensitivities can be improved with future analyses using improved angular reconstruction, and with the IceCube Upgrade.