

Search for High-Energy Neutrinos from Magnetars with IceCube

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⌘ **Relevance:**

- ◆ Young magnetars may be able to emit high-energy neutrinos.
- ◆ Giant flares of magnetars can also produce high-energy neutrinos.
- ◆ The IceCube Neutrino Observatory can potentially detect neutrinos from magnetars and/or their giant flares.

⌘ **What will be done:**

- ◆ Time-integrated stacked likelihood analysis with:
 - ❖ Equal weights to probe magnetars as a general class without taking into account any models.
 - ❖ Weighted scheme: use **x-ray flux** and **inverse period** as weights to see if they have any effect on the neutrino flux.
 - ❖ Test the model presented in Zhang et al.
- ◆ Time-dependent light curve analysis to probe the giant flares of SGRs as a potential source of HE neutrinos.
- ◆ Study of Individual Sources to set upper limits on the neutrino flux from magnetars.

⌘ **Status:**

- ◆ Use the McGill Online Magnetar Catalog, along with Swift J1555.2-5402, SGR 1830-0645, and NGC 253.
- ◆ Generating sensitivities and discovery potentials for the time-integrated stacking analysis.
- ◆ Plotted the differential neutrino flux derived from Zhang et al. using the data in the McGill magnetar catalog.