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GeV neutrino detection with IceCube

In the last decade, IceCube has been able to probe astrophysical sources to test cosmic ray acceleration mechanisms and shine light on properties previously unseen, such as sub-photospheric density and baryon loading. While IceCube is specifically built for neutrino astronomy at TeV and higher neutrino energies, GeV neutrino detection is possible by utilizing the densely populated subvolume of DeepCore, as well as specialized neutrino filtering methods using Machine Learning called ELOWEN. This ELOWEN selection is specialized for neutrinos with energies between 0.5 and 100 GeV. We present this ELOWEN selection, and discuss how it is capable of detecting neutrinos despite high background rates at these lower energies. Furthermore, we discuss how it is capable of detecting low-energy neutrinos from transient phenomena, such as Gamma-Ray Bursts or Gravitational waves.

Collaboration(s)

IceCube

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