

Astrophysical Neutrinos in IceCube: Observations and Prospects

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Summary

The IceCube Neutrino Observatory is a cubic-kilometer scale detector located deep in the glacial ice at the geographic South Pole. Construction took place during the Austral summers of 2005–2010. By 2013, the existence of a high-energy astrophysical neutrino flux was established by an excess of neutrino detections above ~ 10 TeV inconsistent with the expectation from atmospheric backgrounds at the 5.7σ level. In this talk I will review the ongoing efforts to characterize this flux and to identify its sources. I will also discuss the trajectory of IceCube neutrino astronomy in the coming years, including novel analysis methods, multi-messenger astronomy, and proposed detector extensions.

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