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High-Energy Neutrino Observation Highlights from IceCube

Thursday, 28 October 2021 21:00 (30 minutes)

The IceCube Neutrino Observatory consists of one cubic kilometer of deep transparent Antarctic ice that has been transformed into a neutrino telescope at the South Pole. It has been operating in its full configuration for the past 10 years. TeV-PeV neutrinos of cosmic origin have been discovered with an energy flux comparable to that of gamma rays and cosmic rays. High-energy neutrinos are unique astronomical messengers. They provide an unobstructed view of the cosmic accelerators that power the highest energy radiation observed while also providing a means to study neutrinos themselves, allowing IceCube to explore a panoply of topics in astronomy and fundamental physics. In this talk, I will introduce the IceCube experiment and summarize its most recent results, emphasizing the physics potential of a natural astrophysical neutrino beam. I will highlight open questions and address how a next-generation detector will tackle them.

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