

Neutrino astronomy: IceCube results and the future of multimessenger searches

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In the course of the last decade, the IceCube Neutrino Observatory has marked the first milestones of neutrino astronomy, starting with the discovery and characterisation of the astrophysical neutrino flux. Astrophysical neutrinos are unique tracers of hadronic particle acceleration and could be the key to unveil the origin of high-energy cosmic rays. IceCube has been hunting for the sources of astrophysical neutrinos with a wide range of methods. Its realtime program which sends prompt alerts to the multimessenger community following the detection of interesting IceCube events, led in 2017 to the association of a high-energy neutrino and the flaring blazar TXS 0506+056. Subsequent archival searches found a burst of neutrinos from the same location five years earlier. More recently, improved searches for steady point-sources have produced evidence of neutrino emission from the nearby active galaxy NGC 1068. In this talk, I will focus on these and other IceCube neutrino astronomy results and outline the perspective for its near-future multi-messenger searches.

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