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Recent Developments in Neutrino Astronomy in Ice and Water

Thursday 18 July 2013 09:00 (30 minutes)

Observing astrophysical neutrinos can provide a unique insight into the acceleration mechanism of cosmic ray sources: because neutrinos should be produced in hadronic interactions and are neither absorbed nor deflected so they point directly back to their sources. This talk will give a short overview of the field of neutrino astronomy, including a summary of recent results from the ANTARES detector in the Mediterranean and the IceCube Neutrino Observatory in Antarctica, and will briefly discuss future projects including KM3NeT and PINGU. It will cover recent searches in IceCube for high-energy neutrinos (> 100 TeV), which have produced the first evidence for a neutrino flux beyond standard expectations from neutrinos generated by interactions of cosmic rays in the Earth's atmosphere. This includes the observation of events with energies above 1 PeV – the highest energy neutrinos ever observed. The current status of these astrophysical neutrino searches and prospects for the future will be discussed.

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