

COLLOQUE DE PHYSIQUE EPFL

EPFL PHYSICS COLLOQUIUM

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Room CE3

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IceCube and the Discovery of High-Energy Cosmic Neutrinos



The IceCube project has transformed a cubic kilometer of natural Antarctic ice into a neutrino detector. The instrument detects more than 100,000 neutrinos per year in the GeV to PeV energy range. Among those, we have isolated a flux of high-energy cosmic neutrinos. I will discuss the instrument, the analysis of the data, and the significance of the discovery of cosmic neutrinos. The large cosmic neutrino flux observed implies that a significant fraction of the energy in the nonthermal universe, powered by the gravitational energy associated with compact objects from neutron stars to supermassive black holes, is generated by accelerating protons and not just electrons.

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