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IceCube and the discovery of high-energy cosmic neutrinos

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The IceCube project has transformed one 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 recently 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 high cosmic neutrino flux observed implies that a significant fraction of the radiation in the non-thermal universe, powered by compact objects from neutron stars to supermassive black holes, is generated by accelerating protons and not just electrons.

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