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COLLOQUIUM

IceCube: Opening a Neutrino Window on the Universe from the South Pole

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Below the geographic South Pole, the IceCube project has transformed one cubic kilometer of natural Antarctic ice into a neutrino detector. IceCube detects more than 100,000 neutrinos per year in the GeV to 10 PeV energy range. From those, we have isolated a flux of high-energy neutrinos originating beyond our Galaxy, with an energy flux that is comparable to that of the extragalactic high-energy photon flux observed by the NASA Fermi satellite. With a decade of data, we have identified their first sources, which point to the obscured dense cores associated with the supermassive black holes of some active galaxies as the origin of high-energy neutrinos (and cosmic rays!).

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