

JOINT TUFTS/MIT COSMOLOGY SEMINAR

IceCube: Opening a New Window on the Universe from the South Pole.

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Wisconsin

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 neutrinos of cosmic origin, with an energy density similar to that of high-energy photons and cosmic rays in the extreme universe. We recently identified their first source: on September 22, 2017, several astronomical telescopes pinpointed a flaring galaxy, powered by an active supermassive black hole, as the source of a cosmic neutrino with an energy of 290 TeV. Archival IceCube data subsequently revealed in 2014 a flare of more than a dozen neutrinos from the same direction. At a distance of four billion light-years, ten times further than the nearest such sources, the first cosmic ray accelerator seems to belong to a special class of active galaxies that may be responsible for the origin of the highest energy particles in the Universe.

Tuesday, April 16, 2019, 2:30 pm
574 Boston Ave, Room 310
Tufts University

Refreshments at 2:00 outside room 304