

IceCube Polar Science Workshop



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The IceCube Neutrino Observatory and the IceCube Upgrade

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The IceCube Neutrino Observatory is the largest neutrino detector in the world, located at the geographic South Pole. The detector consists of 86 cables called “strings”, each instrumented with 60 sensors. IceCube has observed high energy neutrinos from beyond the solar system, including the highest energy neutrinos ever observed and a neutrino in coincidence with a flaring blazar. IceCube also probes fundamental neutrino oscillation properties, using the constant flux of cosmic ray-induced atmospheric neutrinos. IceCube has observed the disappearance of muon neutrinos and the appearance of tau neutrinos from the atmospheric neutrino sample. The near future of IceCube will be the recently approved IceCube Upgrade, which will add 7 additional strings to the detector with upgraded sensor designs and new calibration devices. The upgraded detector will make world-leading measurements of tau neutrino appearance from the atmosphere, and generate new calibration data which will be applied to the entire archival IceCube data set. The IceCube Upgrade will serve as the first step to the next generation neutrino observatory at the South Pole, called IceCube-Gen2. This talk will discuss the status of the IceCube Upgrade and its science goals.

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Session Classification: Available instrumentation at the South Pole (IceCube, SPICEcore, GPS stake field and other)