

IceCube Polar Science Workshop



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The IceCube ice anisotropy

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The IceCube Neutrino Observatory instruments about 1 km³ of deep, glacial ice at the geographic South Pole with 5160 photomultipliers to detect Cherenkov light of charged relativistic particles. The experiment pursues a wide range of scientific questions ranging from particle physics such as neutrino oscillations to astronomy with the search for sources of astrophysical neutrinos. Most of these efforts rely heavily on an ever more precise understanding of the optical properties of the instrumented ice. A largely unexplained light propagation effect is an anisotropic attenuation, which is aligned with the local flow of the ice. In this talk, the micro-structure of ice as a birefringent polycrystal is explored as the cause for this anisotropy.

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