

Talk at Splinter Meeting

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ICECUBE-GEN2: PERSPECTIVES AND STATUS

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Given recent observations of an astrophysical flux of neutrinos by the IceCube Neutrino Observatory, the design of the next generation Antarctic neutrino observatory is well underway. The IceCube-Gen2 facility will comprise three detector components: a high-energy array, a surface air shower array, and PINGU. PINGU is a densely instrumented detector in the deep ice with a GeV energy threshold for precision measurements of atmospheric neutrinos. The high-energy array will instrument a $\sim 10 \text{ km}^3$ volume of clear glacial ice at the South Pole to deliver substantial increases in the observed astrophysical neutrino sample for all neutrino flavors. This detector would support a rich physics program, including a search for point sources, a more detailed spectral and flavor characterization of the astrophysical neutrinos, searches for cosmogenic neutrinos, studies of cosmic rays, and searches for signatures of beyond-the-standard-model neutrino physics. Additionally, astrophysical neutrino sensitivity is increased by the addition of an extensive surface detector to identify and reject atmospheric backgrounds originating from the Southern hemisphere. This large detector, in combination with the existing IceCube neutrino observatory and the rest of the IceCube-Gen2 facility will be the flagship experiment of the new field of neutrino astronomy.