

Abstract Submitted
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IceCube Gen2: The Next Generation of Neutrino Astronomy

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— The observations of an astrophysical flux of neutrinos by the IceCube neutrino observatory signaled the start of the era of neutrino astronomy. While the source of these astrophysical neutrinos remains unclear, many strong constraints have already been made. Unfortunately, the limits of the current detector are becoming clear and the design of the next generation of Antarctic neutrino observatory is well underway. The IceCube-Gen2 high-energy array will instrument a $\sim 10 \text{ km}^3$ volume of clear glacial ice at the South Pole to deliver substantially larger astrophysical samples of all neutrino flavors. This contribution will highlight the science case and detector sensitivity studies performed in the design process. Additionally, astrophysical neutrino sensitivity can be 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.

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