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Recent results from IceCube

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IceCube is a cubic kilometer neutrino observatory at the geographic South Pole whose sensitivity from PeV down to GeV, or MeV using a special DAQ, has spawned a diverse scientific program. It discovered and continues to characterize the astrophysical neutrino flux, recently identifying a galactic component. To resolve it further, IceCube has found a 4.2σ excess from the direction of NGC 1068 and continues to target a variety of source candidates, both above and below 1 TeV. IceCube maintains several programs for real-time alerts and follow-ups. The background of events caused by particles from cosmic ray air showers in itself enables the study of cosmic ray and neutrino physics, in particular neutrino oscillations. IceCube further makes significant efforts towards physics beyond the Standard Model such as searching for quantum gravity. This talk highlights results since the previous Marcel Grossmann meeting in 2021 and provides an outlook on prospects for the planned high-energy extension IceCube-Gen2.

Presenter: RAAB, Christoph

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