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Constraints on UHECR sources from IceCube

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IceCube is a cubic kilometer scale, deep-ice Cherenkov neutrino detector at the South Pole. IceCube's cosmic neutrino searches cover an energy region all the way from below TeV to EeV and higher. In the EeV energy region, a flux of 'cosmogenic' neutrinos generated by interactions of ultra-high energy cosmic rays on intervening radiatio backgrounds is expected. We have analysed 7 years of IceCube data with the highest sensitivity to date to neutrinos of energy between 10 PeV and 10 EeV. This provides insights into the sources and nature of UHECRs since the "guaranteed"cosmogenic neutrino flux depends in fact on parameters such as the redshift evolution of the UHECR sources, the energy at which UHECRs transit from Galactic to extragalactic, and most importantly, the mass composition of UHECRs. In this talk, results from the cosmogenic neutrino search with IceCube will be presented and their implications discussed.

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