

Abstract Submitted  
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**Atmospheric charm: perturbative production and IceCube neutrino backgrounds**<sup>1</sup> MARY HALL RENO, University of Iowa, ATRI BHATTACHARYA, University of Arizona, RIKARD ENBERG, Uppsala University, INA SARCEVIC, University of Arizona — Neutrinos from charmed hadrons produced by cosmic ray interactions with air nuclei are the main background to high energy astrophysical neutrino flux measurements. Using next-to-leading order QCD production of charm pairs and multi-component models of the incident cosmic ray flux, we make a new theoretical evaluation of the flux of prompt neutrinos from charmed hadron production and decay in the atmosphere. Collider results on charm pair production help constrain the range of renormalization and factorization scales in the NLO cross section. We discuss uncertainties in the predicted flux and the implications for the background event rates at the IceCube Neutrino Observatory.

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