

Abstract Submitted  
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**W-Boson and Trident Production in IceCube and IceCube-Gen2:  
Cross Sections and Detectability**<sup>1</sup> BEI ZHOU, JOHN BEACOM, Ohio State Univ - Columbus — Detecting TeVPeV cosmic neutrinos provides crucial tests of neutrino physics and astrophysics. The statistics of IceCube and the larger proposed IceCube-Gen2 demand calculations of neutrino-nucleus interactions subdominant to deep-inelastic scattering, which is mediated by weak-boson couplings to nuclei. The largest such interactions are W-boson and trident production, which are mediated instead through photon couplings to nuclei. We study their phenomenological consequences. We find that: (1) These interactions are dominated by the production of on-shell W-bosons, which carry most of the neutrino energy, (2) The cross section on water/iron can be as large as 7.5(<https://arxiv.org/abs/1910.08090> , <https://arxiv.org/abs/1910.10720>)

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