

Abstract Submitted  
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**Position Reconstruction for DarkSide-20k** DAVID-MICHAEL POEHLMANN, University of California, Davis, THE DARKSIDE COLLABORATION COLLABORATION — DarkSide-20k is a next-generation direct dark matter search experiment under construction at the Gran Sasso National Laboratory (LNGS) in Italy. The core of the detector is a two-phase liquid argon time projection chamber designed to probe WIMP interactions down to the neutrino floor. To ensure the 200 ton-year exposure has zero instrumental backgrounds, low-radioactivity underground argon is used as the detector medium. Backgrounds from detector surfaces are primarily rejected through fiducialization, which requires accurate reconstruction of event vertices. Monte Carlo simulations of interactions within the detector have been used to study the position reconstruction resolution of DarkSide-20k. In this talk, I discuss the performance of machine learning-based position reconstruction algorithms on simulated DarkSide-20k datasets.

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