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Muon-induced spallation backgrounds in DUNE

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Galactic supernovae are rare, just a few per century, so it is important to be prepared. If we are, then the long-baseline detector DUNE could detect thousands of events, compared to the tens from SN 1987A. An important question is backgrounds from muon-induced spallation reactions. We simulate particle energy-loss processes in liquid argon, and compare relevant isotope yields with those in the water-Cherenkov detector SuperK. Our approach will help optimize the design of DUNE and further benefit the study of supernova neutrinos.

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