

Abstract Submitted
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Sterile Neutrinos and Stellar Collapse JUN HIDAKA, GEORGE FULLER, University of California, San Diego — We investigate the effects of medium-enhanced active-sterile neutrino flavor conversion in the infalling core of a presupernova star. We consider singlet (“sterile”) neutrino rest masses in the range 1 eV to 10 MeV and take these species to have very small vacuum mixing with active neutrinos. These parameters subsume the interesting range for viable sterile neutrino dark matter candidates. We find that some ranges of sterile neutrino mass and mixing can give reductions in core entropy and lepton numbers, leading to significant changes in core collapse nuclear physics, dynamics, and composition and opening a possible new probe of this sector of neutrino physics.

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