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Sterile Neutrinos and Supernova Nucleosynthesis JOSHUA BEUN, GAIL MCLAUGHLIN, North Carolina State University, REBECCA SURMAN, Union College, RAPH HIX, Oak Ridge National Laboratory — Neutrinos play an important role in the core-collapse supernova environment, from facilitating the explosion mechanism to influencing the outflow's elemental composition. Traditional heavy element nucleosynthesis, the r-process, are stifled by electron neutrinos during the alpha particle formation epoch. Introduction of a sterile neutrino species can temper this alpha effect as well as generate an environment sufficiently neutron-rich for fission cycling to occur. Fission cycling in the r-process produces abundance patterns similar to the halo star data. Here we examine reductions in the neutrino flux necessary to achieve fission cycling; sterile neutrinos or other new physics may realize these reductions.

Joshua Beun
North Carolina State University

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