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Supernova Neutrino-process nucleosynthesis with neutrino self-interaction and MSW effects[1] GRANT MATHEWS, University of Notre Dame, HEAMIN KO, Soongsil University, MYUNG-KI CHEOUN, Soongil University, EUNJA HA, Soongsil University, MOTOHIKO KUSAKABE, Beihang University, TAKEHITO HAYAKAWA, NQRST, HIROKAZU SASAKI, TOSHITAKA KAJINO, NAOJ, MASA-AKI HASHIMOTO, Kyushu University, MASAOMI ONO, RIKEN, MARK USANG, SATOSHI CHIBA, Tokyo Inst. Tech, KO NAKAMURA, Fukuoka Univ., ALEXEY TOLSTOV, KENICHI NOMOTO, IPMU, TOSHIHIKO KAWANO, LANL — The ν-process is a unique nucleosynthesis mechanism that only affects the abundances of some rare nuclei. There are, however, uncertainties due to the neutrino mass hierarchy, neutrino oscillations and the neutrino self-interaction. In this talk we discuss calculations of the abundances of ^{7}Li, ^{11}B, ^{92}Nb, ^{98}Tc, ^{138}La, and ^{180}Ta produced by the ν-process. We consider the modification both by the ν self- interaction near the neutrinosphere and the Mikheyev-Smirnov-Wolfenstein effect in the outer layers based upon time-dependent neutrino energy spectra from core-collapse supernova simulations. Abundances of ^{7}Li and heavy isotopes ^{92}Nb, ^{98}Tc and ^{138}La are reduced by a factor of ~ 2 by the ν-self-interaction. In contrast, ^{11}B is relatively insensitive. We find that the abundance ratio of heavy to light nuclei, ^{138}La/^{11}B, is a robust probe of the neutrino mass hierarchy, and the normal mass hierarchy is more likely to be consistent with the solar meteoritic abundances.

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