

Abstract Submitted  
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**Neutrino-Induced Reactions on Ni and Fe Isotopes and Nucleosynthesis in Stars** TOSHIO SUZUKI, Nihon University, MICHIO HONMA, University of Aizu, KOJI HIGASHIYAMA, Chiba Institute of Technology, TAKASHI YOSHIDA, TOSHITAKA KAJINO, TAKAHARU OTSUKA, HIDEYUKI UMEDA, KEN'ICHI NOMOTO, University of Tokyo — Neutrino-induced reactions on Ni and Fe isotopes are investigated based on new shell model Hamiltonians for  $fp$ -shell, GXPF1. Spin and magnetic properties of nuclei have been considerably improved by the Hamiltonians, where important roles of tensor interaction on shell evolutions are properly taken into account. Charge-exchange reactions on  $^{56}\text{Fe}$  induced by DAR neutrinos is investigated by using Gamow-Teller strength obtained by the new Hamiltonian, GXPF1J. The observed cross section is shown to be consistent with the observation. The Gamow-Teller strength in  $^{56}\text{Ni}$  is found to be more spread compared to previous calculations and result in a considerably large branching ratio for the proton knock-out channel. This leads to the enhancement of the production yields of heavy elements such as  $^{55}\text{Mn}$  and  $^{59}\text{Co}$  in population III stars for the new Hamiltonian [1]. The electron capture reactions on  $^{56}\text{Ni}$ , neutrino-induced reactions on  $^{52}\text{Fe}$  and the production of elements such as  $^{51}\text{V}$  in supernovae will be also discussed.

[1] T. Suzuki et al., Phys. Rec. C79, 061603(R) (2009).

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