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Influence of Neutrino–Nuclear Reactions on the Abundance of ⁷⁴Se

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The p-nuclei are supposed to be produced in different astrophysical processes, such as rapid-proton capture, photonuclear reaction, and neutrino-induced reaction. To date, their abundance cannot be reasonably explained. In the present work, the cross sections of the 74 Ge(ve, e-) 74 As reaction are calculated with the theoretical and experimental B(GT) values, respectively. The abundance ratios between 74 Se and 74 Ge produced from the neutrino process (v-process) are estimated based on the simple hypothesis for core-collapse supernova explosions. The results show that the upper limit of the 74 Se and 74 Ge abundance ratio resulting from the v-process is about 36% of the value in the solar system.

Primary authors: SONG, Na (CIAE); LI, Zhihong (CIAE) Presenter: SONG, Na (CIAE)

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