

Influence of Neutrino–Nuclear Reactions on the Abundance of ^{74}Se

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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 $^{74}\text{Ge}(\nu e, e^{-})^{74}\text{As}$ 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 (ν -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 ν -process is about 36% of the value in the solar system.

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