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Radiative proton-capture cross-sections with $^{112,114}\text{Cd}$

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The reaction network in the neutron-deficient part of the nuclear chart around $A \sim 100$ contains several nuclei of importance to astrophysical processes, such as the p -process. This work reports on the results from recent experimental studies of the radiative proton-capture reactions $^{112,114}\text{Cd}(p,\gamma)^{113,115}\text{In}$. Isotopically enriched ^{112}Cd and ^{114}Cd targets have been used for the determination of the cross sections, for proton beam energies residing inside the respective Gamow windows for each reaction. Two different techniques, the in-beam γ -ray spectroscopy and the activation method have been implemented, where the latter is considered mandatory to account for the presence of low-lying isomers in ^{113}In and ^{115}In , with energies of $E \approx 392$ keV, and $E \approx 336$ keV, respectively. Following the measurement of the cross sections, the astrophysical S factors have been subsequently deduced. The experimental results are compared to detailed Hauser-Feshbach theoretical calculations carried out with TALYS v1.95.

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