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## Isomeric states of $^{113,115}\text{In}$ in radiative proton-capture reactions at energies of astrophysical interest

The population and decay of isomeric states in the neutron-deficient nuclei around  $A \sim 100$  is important for astrophysical processes, as these states are often involved in vast reaction networks taking place at astrophysical sites. The general scarcity of cross section data for isomeric states in the  $p$ -process has provided the main motivation behind the present work. Experimental cross sections in  $^{112,114}\text{Cd}(p, \gamma)^{113,115}\text{In}$  reactions have been measured for proton beam energies residing inside the respective Gamow windows for each reaction, using isotopically enriched targets. Two different techniques, the in-beam  $\gamma$ -ray spectroscopy and the activation method have been applied, where the latter is considered mandatory to account for the presence of low-lying isomers in  $^{113}\text{In}$  ( $E \approx 392$  keV,  $t_{1/2} \approx 100$  min), and  $^{115}\text{In}$  ( $E \approx 336$  keV,  $t_{1/2} \approx 4.5$  h). Following the measurement of the cross sections, the astrophysical  $S$  factors and isomeric cross section ratios have been subsequently deduced. The experimental results provide stringent tests to theoretical models, confining the parametric space in the detailed Hauser-Feshbach calculations carried out subsequently.

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