Abstract:
High-resolution transmission and capture time-of-flight measurements of 127I and 129I have been carried out at the 150 MeV pulsed neutron source at the Geel electron linear accelerator (GELINA) facility of the Institute for Reference Materials and Measurements. Below 10 keV, the individual resonances were analyzed with the Reich-Moore approximation of the R-matrix theory. The resonance parameters (energy and partial widths) and the potential scattering length $R_0$ were determined using the resonance shape analysis technique. Within the 3.5–100 keV neutron energy range, the capture and total cross sections were interpreted in terms of average resonance parameters with the Hauser-Feshbach formalism with width fluctuations. This work has delivered a consistent set of 127,129I s- and p-wave average resonance parameters (neutron strength function $S_I$, mean level spacing $D_I$, and average radiation width $I$).

URI:

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