

LIFETIME MEASUREMENTS AND THE NONAXIAL DEFORMATION IN
 ^{119}I

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Lifetimes in four negative parity bands of ^{119}I were measured using DSAM and RDM. ^{119}I nuclei were produced in the $^{109}\text{Ag}(^{13}\text{C},3n)$ reaction, $\gamma\gamma$ coincidences were collected using the NORDBALL array. The detailed description of experiment is given in (1,2,3). Information about electromagnetic properties of four negative parity bands, originating from the $h_{11/2}$ quasiproton coupled to an axially asymmetric core, was obtained. The lifetimes of 31 negative parity levels were determined. That is one of the largest sets of electromagnetic transition probabilities for an odd - A nucleus from the $50 < Z, N < 82$ region yet obtained. The experimental data presented in this paper and in (4) allow us to draw a conclusion concerning the shape of the ^{119}I nucleus. We see that the 53-rd proton added to the ^{118}Te nucleus, through the polarisation effect, changes the properties of the even-even core. The β -deformation becomes at least as large as that of ^{120}Xe ($\beta \approx 0.28$), whereas the γ -deformation is around 30° . Comparison of experimental data with calculation within Core Quasiparticle Coupling Model indicates the advantage of the γ -soft model over the γ -rigid one in the description of $h_{11/2}$ band structure in ^{119}I . One can see, that the most valuable information concerning the shape of ^{119}I is based on the properties of the unfavoured states, especially those belonging to band 9, with their regular energy spacing and fast intraband transitions.

References:

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