

Frontiers in Gamma Ray Spectroscopy

FIG18

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Study of two quasi particle bands in ^{104}Pd

Content :

There are four proton holes and a number of neutron particles lie in the upper part of the $g\ 9/2$ proton orbital and in the middle part of the $d\ 5/2$, $g\ 7/2$ neutron orbital respectively in Pd nuclei. A number of rotational bands based on quasi neutron particles, antimagnetic rotational bands associated with proton holes and neutron particles were reported in $^{100,101,104}\text{Pd}$ nucleus [1,2,3,4]. In previous study of Ref. [1], Band 9 was reported with a few gamma transitions without spin and parity assignment. Few levels of bands 5 and 6 were also reported without spin and parity assignments. To know the structure of a band, confirmation of spin and parity is necessary. In order to confirm the spin and parity of these states an experiment has been carried out via $^{94}\text{Zr}(^{13}\text{C}, 3n)$ reaction at beam energy 55 MeV with 15UD pelletron accelerator facility [5,6] of Inter University Accelerator Centre (IUAC), New Delhi. The target was $\sim 1\text{mg}/\text{cm}^2$ thick and $\sim 10\text{mg}/\text{cm}^2$ thick ^{197}Au backing. The emitted gamma rays were detected by using 18 clover detectors at angles 32° , 57° , 90° , 123° , 148° of beam direction at Indian National Gamma Array (INGA) [7]. The multipolarities of few states of these two bands have been confirmed on the basis of R_{DCO} ratios. These results will be helpful for confirming the spin of several levels of ^{104}Pd nucleus. New results will be discussed during the conference.

References:

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