

# Frontiers in Gamma Ray Spectroscopy

## FIG18

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### Study of two quasi particle bands in $^{104}\text{Pd}$

#### 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  $^{94}\text{Zr}(^{13}\text{C}, ^3\text{n})$  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  $^{197}\text{Au}$  backing. The emitted gamma rays were detected by using 18 clover detectors at angles  $32^\circ$ ,  $57^\circ$ ,  $90^\circ$ ,  $123^\circ$ ,  $148^\circ$  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  $R_{\text{DCO}}$  ratios. These results will be helpful for confirming the spin of several levels of  $^{104}\text{Pd}$  nucleus. New results will be discussed during the conference.

#### References:

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