

Frontiers in Gamma Ray Spectroscopy

FIG18

Contribution ID : 32



Isomers and associated rotational bands in ^{127}Xe

Content :

Nuclear meta-stable states with long half-lives are known as isomers. Systematically, rotational bands above one-quasineutron isomeric states were reported in odd-A Te-Xe-Ba isotopes around $A = 130$. Isomeric states with three-quasiparticle configurations are also expected in these nuclei, but reported only in ^{129}Ba , $^{131,133}\text{Xe}$. Also, an isomeric state at 2730 keV, with $T_{1/2} = 25$ ns, was reported in ^{127}Xe without spin and parity assignment. Therefore, in-beam γ -ray spectroscopy was carried out to infer the structure of this state. Excited states of ^{127}Xe were populated via $^{122}\text{Sn}(^9\text{Be}, 4n\gamma)$ reaction at Inter-University Accelerator Centre, New Delhi. Fourteen Compton suppressed clover detectors of Indian National Gamma Array were used to collect the two- and higher fold coincident γ -events. INGAsort and RadWare packages were used for offline data analysis. From this investigation, spin and parity of the present isomeric state have been assigned unambiguously. Two new decay paths of this state have also been identified. Structural features of this isomer will be discussed during the conference.

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Session classification : --not yet classified--

Track classification : --not yet classified--

Type : Poster