

Frontiers in Gamma Ray Spectroscopy

FIG18

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Probing nuclei near shell closure using alpha beam

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Content :

Nuclei near shell closures provide the opportunity to probe the various aspects of excitations of single particle orbitals and their shape driving effects. Collectivity can be induced in near spherical nuclei close to shell closure due to the high-j intruder single particle orbitals. The nuclei near $Z=50$, $N=82$ and $Z=82$, $N=126$ shell closure is difficult to access by heavy ion reactions and light ion induced reactions are most suitable to populate them with large cross section. Both yrast and non-yrast states are possible to be excited in these light ion induced reaction and one can probe the single particle excitations by horizontal spectroscopy. The single particle and collective excitations of some of the nuclei near shell closure have been probed recently at VECC using alpha beams and Compton suppressed Clover detector setup of VENUS and INGA. The advantages of using alpha beams and some of the related physics results of these measurements will be presented.

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