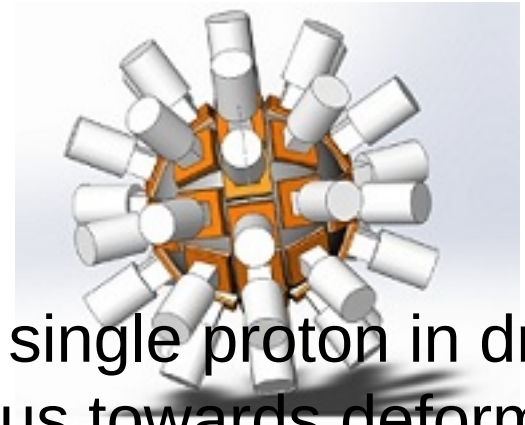
Frontiers in Gamma Ray Spectroscopy
FIG18



Contribution ID : 20

Effect of single proton in driving the nucleus towards deformation

Content :

In mass 200 region, nuclei close to 208Pb show variety of band structures representing different ways of coupling of the odd valance particles with the core. The ground and first few excited states are dominated by the pure single particle orbitals near Fermi level, while the excitation of valance particles or holes to the high-j intruder orbitals play an important role in bringing high angular momentum to the system. As a result, various core coupled structures are evolved while going from the deformed rare earth region to the spherical region near doubly magic shell closure.

Odd-A mercury (Z=80) nuclei close to N=126 closed shell show decoupled band structures with a near spherical shape, built on the i13/2 isomeric state, while the proton particles are coupled to generate 0+ states. For the neighbouring Tl (Z=81) nuclei, the odd-proton occupies the intruder h9/2 orbital, which comes downwards for oblate deformation from the upper level of Z=82 shell gap. The shape driving effects of the h9/2 orbital drive the nucleus towards deformation leading to the strongly coupled rotational states in Thallium nuclei.

The above effects have been investigated in 199Hg (Z=80,N=119) and 199Tl(Z=81,N=118) nuclei, which were produced by beam from K-130 Cyclotron at VECC, Kolkata using the reactions 198Pt(,3n)199Hg, 197Au(,3n)199Tl with 36 MeV and 30 MeV beam energies respectively. The excited states of these nuclei are studied by detecting the gamma-rays with VECC array for Nuclear Spectroscopy (VENUS), consisting of six Compton suppressed Clover HPGe detectors.

The effect of high-j orbitals on the structure of 199Hg and 199Tl will be presented.

Primary authors : Mr. BHATTACHARYA, Soumik (VARIABLE ENERGY CYCLOTRON CENTRE)

Co-authors : Dr. BHATTACHARYYA, Sarmishtha (Variable Energy Cyclotron Centre) ; Dr. BHATTACHARJEE, T. (Variable Energy Cyclotron Centre) ; Dr. MUKHOPADHYAY, S. (Variable Energy Cyclotron Centre) ; Mr. MONDAL, D. (Variable Energy Cyclotron Centre) ; Dr. PANDIT, D. (Variable Energy Cyclotron Centre) ; Dr. PAL, Surajit (Variable Energy Cyclotron Centre) ; Dr. BANERJEE, S. R. (Variable Energy Cyclotron Centre) ; Dr. DAS GUPTA, Shinjinee (Victoria Institution College) ; Mr. BANIK, RANABIR (VARIABLE ENERGY CYCLOTRON CENTRE) ; Dr. MUKHERJEE, Gopal (Variable Energy Cyclotron Centre) ; Mr. ALAM, S. S. (Variable Energy Cyclotron Centre) ; Dr. DHAL, A (Variable

Energy Cyclotron Centre) ; Mr. ASGAR, Md. Ali (Prabhat Kumar College) ; Dr. ROY, T. (Variable Energy Cyclotron Centre) ; Mr. SAHA, Arunabha (Variable Energy Cyclotron Centre)

Presenter : Mr. BHATTACHARYA, Soumik (VARIABLE ENERGY CYCLOTRON CENTRE) ; Mr. BANIK, RANABIR (VARIABLE ENERGY CYCLOTRON CENTRE)

Session classification : --not yet classified--

Track classification : --not yet classified--

Type : Poster