

# Frontiers in Gamma Ray Spectroscopy

## FIG18



Contribution ID : 89

## High Spin Spectroscopy: Microscopic Theory and Perspectives

Monday 12 Mar 2018 at 16:00 (00h20')

### Content :

We emphasise the role of interacting Neutrons and Protons in large Shell Model Spaces, interacting by effective two-body interactions, in determining nuclear properties, deformations and spectra.

Theoretical formalism to study the many-body interacting system will be discussed. Deformed Hartree-Fock theory and Angular Momentum Projection (along with diagonalisation for band mixing will be discussed.

Results of theoretical calculations and comparison with available experimental data will be presented. Some theoretical predictions and expectations will be given for future studies.

Some of these will be:

High Spin phenomena in including heavy nuclei (rare-earths, Hf, Hg etc)

Deformed structures and excited rotational bands in closed shell nuclei ( $^{82}\text{Ge}$ ,  $^{84}\text{Se}$ ,  $^{56}\text{Ni}$ ,  $^{78}\text{Ni}$  etc)

Future perspectives:

Band structures in exotic nuclei

Need for gamma-ray spectroscopy of multiquasiparticle excited configurations

### References:

1. Zashmir Naik and C .R. Praharaaj, Phys. Rev. C67,054318 (2003)
2. S.K. Ghorui and C.R. Praharaaj, Pramana 82, 659-669 (2014); S.K Ghorui et. al., IJMP E21, 1250070 (2012)

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