
IDENTICAL FEATURES OF THE SEMI-MAGIC SENIORITY ISOMERS BEYOND DOUBLY-MAGIC CORES

**Bhoomika Maheshwari and Ashok Kumar Jain, Department of Physics, Indian Institute of
Technology, Roorkee, India**

Our atlas of nuclear isomers [1] presents data on more than 2450 nuclear isomers which reveal many universal and novel features. We find that the semi-magic nuclear isomers exhibit almost identical excitation energy systematics even when different orbitals from different valence space are involved. The present work focuses on the 6^+ isomers in the $Z=50$ isotopic and the $N=82$ isotonic chains having ^{132}Sn as a core, and the 8^+ isomers in the $Z=82$ isotopic and the $N=126$ isotonic chains having ^{208}Pb as a core. Large scale shell model calculations have been carried out to decipher their configurations and seniorities, which are able to reproduce the experimental systematics quite well. We, therefore, conclude them as same seniority $\nu=2$ isomers, which further leads to identical structural features of these isomers. On the other hand, it also provides a way to test the realistic effective interactions, and new selection rules in terms of the transition probabilities, particularly at the nuclear extremes [2].

REFERENCES

- [1] A. K. Jain, B. Maheshwari, S. Garg, M. Patial and B. Singh, To be published in Nuclear Data Sheets.
- [2] B. Maheshwari, A. K. Jain and P. C. Srivastava, Phys. Rev. C 91, 024321 (2015).