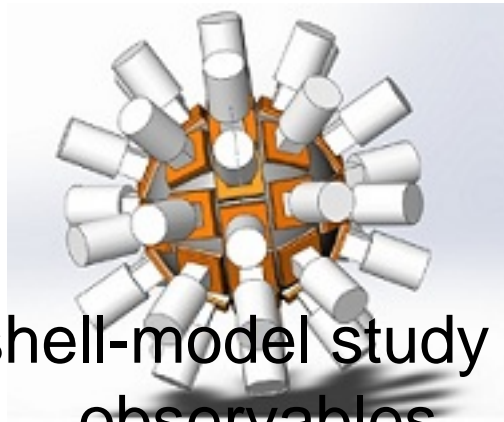


# Frontiers in Gamma Ray Spectroscopy

## FIG18



Contribution ID : 9

## Ab initio shell-model study of nuclear observables

Wednesday 14 Mar 2018 at 12:15 (00h30')

### Content :

Modern ab initio approaches, like the IM-SRG, the coupled cluster theory and the self-consistent Green's function method, have been established and provide accurate description of nuclear properties. The ab initio approaches are more fundamental, although in many cases empirical interactions still are used as benchmarks. The ab initio calculations can be used not only for spherical nuclei, but also to predict the ground and excited state energies and deformations for doubly open shell nuclei. With these recent ab initio approaches it is now feasible to perform ab initio calculations for medium and heavier nuclei.

In this meeting I will present first ab initio shell-model results of electromagnetic properties [1], GT strengths [2] and spectroscopic factor strengths [3] of sd shell nuclei. For above calculations, the ab initio effective interactions are based on in-medium similarity renormalization group (IM-SRG) and coupled-cluster effective interaction (CCEI) approaches.

### References

- [1] A. Saxena and P.C. Srivastava, First-principles results for electromagnetic properties of sd shell nuclei, Phys. Rev. C 96, 024316 (2017).
- [2] A. Saxena, P.C. Srivastava and T. Suzuki, Ab initio calculations for Gamow-Teller strengths in sd shell, arXiv:1801.04859.
- [3] P.C. Srivastava and V. Kumar, Spectroscopic factor strengths using ab initio approaches, Phys. Rev. C 94, 064306 (2016).

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