

Comprehensive Shell-Model Analysis of the Spectroscopic Properties in ^{28}Al

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In experimental and theoretical nuclear physics, the odd-odd ^{28}Al nucleus is an important radioactive nuclide. As a neutron-rich sd-shell nucleus near the $N=Z$ dripline, it serves as a benchmark for shell-model calculations, testing interactions in the $A = 28$ isobaric mass triplet (^{28}Mg , ^{28}Al , ^{28}Si).

A comprehensive shell-model study, employing the PSDPF interaction [1], of the spectroscopic properties of the odd-odd nucleus ^{28}Al has been performed. Our study focuses on reproducing the experimental observed energy levels, electromagnetic transition probabilities, magnetic dipole and electric quadrupole moments. In addition, important predictions have been proposed for futur experiments.

The comparison between our theoretical results and experimental data [2] demonstrates the suitability of the PSDPF interaction in accurately describing the nuclear structure of ^{28}Al . A detailed discussion of our work will be presented in this contribution.

References

- [1] M. Bouhelal et al., *Nucl. Phys. A* **864** (2011) 113-127.
- [2] <http://www.nndc.bnl.gov/>.