Contribution ID: **5** Type: **poster presentation**

A new Hamiltonian for jj4_45 model space and corresponding spectroscopic study

Wednesday 27 August 2025 18:30 (12 minutes)

This study advances the nuclear shell model by systematically investigating effective interactions in the f5pgd5 shell region (mass numbers 40 < A < 100).
Building on existing interactions(JUN45 and jj45pna), we refine central, spin-orbit, and tensor force parameters, incorporating universal monopole corrections to develop the first dedicated effective interaction for the f5pgd5 region. Validation near the N=50 shell closure demonstrates excellent agreement with experimental data and superior performance over existing models, confirming its applicability across this region and beyond.
Leveraging the optimized interaction, we generate a high-precision theoretical database for nuclides in this mass range, encompassing binding energies, excitation spectra, level densities, β-decay properties, and spectroscopic factors. Our work provides a foundational tool for future studies in nuclear structure and reaction physics, bridging theory and experiment in medium-mass nuclei.

Research field of your presentation

Theoretical Low-energy nuclear physics

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Session Classification: Young Scietist Session 5 (Poster)