

Finite Nuclei Properties from Nuclear Matter Equation of State

Monday 27 October 2025 18:30 (20 minutes)

This work provides an in-depth analysis of finite nuclei properties and nuclear matter saturation properties, highlighting the essential role of three-body forces (3BF) in connecting microscopic interactions with macroscopic nuclear phenomena. Energy density functional techniques are used in the extension to finite nuclei using the equation of state (EOS) from Brueckner-Hartree-Fock (BHF) theory with chiral next-to-next-to-next-to-leading order (N³LO) potential, providing binding energies and charge radii that are in a good agreement with experimental data. The study presents enhanced density functionals and emphasizes the impact of the tensor force on EOS. These findings have important ramifications for nuclear structure and astrophysical applications since they demonstrate a strong correlation between finite-nuclei phenomenology and ab initio nuclear matter calculations.

Author: MOHAMMED, Ahmed Refaat Mohammed (Sohag University)

Presenter: MOHAMMED, Ahmed Refaat Mohammed (Sohag University)

Session Classification: Poster session & Welcome drinks

Track Classification: Nuclear Physics