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Three-nucleon forces at neutron-rich extremes

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In the framework of chiral effective field theory, a systematic expansion for nuclear forces, it is possible to obtain valence shell interactions for nuclear structure calculations. These are obtained by applying many-body perturbation theory (MBPT) to a renormalization group (RG) evolved low-momentum interaction. In this approach three-nucleon forces are included naturally. Normal-ordered three-nucleon forces contribute to effective single-particle energies as well as two-body matrix elements. This talk will focus on the contributions from residual three-nucleon forces, which are expected to become more important with valence nucleons, so for the most neutron-rich isotopes. The theoretical findings are compared to a recent R3B-LAND experiment for 25,26O performed at GSI, Darmstadt.

Auteur principal: M. SIMONIS, Johannes (TU Darmstadt)

Orateur: M. SIMONIS, Johannes (TU Darmstadt)

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