

## **FRONTIERS IN AB-INITIO NUCLEAR STRUCTURE**

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Atomic nuclei constitute the heart of matter. They drive the synthesis of chemical elements, serve as star fuel and as laboratories to test fundamental interactions and the Standard Model. Predictions of nuclear properties that start from forces among nucleons and their interactions with external probes as described by chiral effective field theory are arguably the doorway to a solid connection between observations and the underlying fundamental theory of quantum chromo-dynamics. Today, thanks to advances in many-body theory and high performance computing, we can calculate nuclear structure and reactions in a unified way for increasingly large systems and estimate theoretical uncertainties. Recent highlights will be presented, that portrait the role of ab-initio calculations to tackle contemporary issues, such as the investigation of neutron-rich nuclei and the proton-radius puzzle.