



Nuclear Phenomenology

« The ab initio endeavour:
Describing the nuclear chart from the ground up »

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Ab initio methods for low-energy nuclear physics have vastly improved their range both in terms of isotopes and observables of interest over the past two decades [1]. Driven by formal and numerical advances, this progress now allows them to tackle phenomena from spectroscopy to deformation, from neutrinoless double-beta decay to reactions of astrophysical interest.

In this talk, I will introduce ab initio methods as a set of consistent yet different approaches that all tackle nuclear phenomenology from inter-nucleonic interactions anchored in chiral Effective Field Theory. I will then review a set of diverse recent results from groups all over the world. Finally, I will focus on recent progress in the design of nuclear interactions and how it paves the way to exciting experimental efforts at radioactive ion beam facilities while connecting to nuclear astrophysics [2].

[1] H. Hergert, A Guided Tour of ab initio Nuclear Many-Body Theory, *Front. Phys.* 8, 379 (2020)

[2] P. Arthuis, K. Hebeler & A. Schwenk, Neutron-rich nuclei and neutron skins from chiral low-resolution interactions, arXiv:2401.06675 (2024)

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Amphi Dirac, 2:30 pm