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Interplay between many-body methods and EFT-inspired Hamiltonians in nuclear structure

In recent years, chiral effective field theory (EFT) has reshaped our approach to the modelling of nuclear interactions, both conceptually and practically. At present several EFT-inspired nuclear Hamiltonians, derived more or less rigorously according to EFT principles, are on the market and are successful in describing numerous properties of light and medium-mass nuclei. Nevertheless, there is increasing debate on whether such calculations truly fulfil EFT potentialities, with alternative EFT schemes also being pursued. I this seminar I will discuss how these developments and issues at the level of the nuclear Hamiltonian impact many-body methods and calculations. I will do so by first examining a few successful results in medium-mass nuclei obtained with chiral-EFT potentials. Next, I will present a preliminary study of extended neutron matter where a pionless-EFT interaction, devoid of the issues alluded to above, is employed.

Mercredi 28 juin 2017, 11h30
IPN, Bât. 100, salle des conseils