



Institut de recherche sur les lois fondamentales de l'univers
Département de Physique Nucléaire

ESNT Seminar

Wednesday 11/12/2019, 14h-15h

Bat 703, DPhN salle de séminaires 135, CEA Saclay, Orme des Merisiers

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Recent ab initio studies of nuclei from self-consistent Green's functions theory

I will revise recent computations of nuclei in the sd and pf shells based on self-consistent Green's functions (SCGF) theory.

The SCGF is an appealing many-body approach due to its capability of accessing directly the spectral functions for the addition and removal of a nucleon—this not only allows us to access ground state properties (e.g. binding and radii) but also to investigate how many-body correlations affect the single particle structure of a nucleus and simple scattering processes.

This talk will focus on applications of SCGF done over the past year and it will cover the response to high-energy electroweak probes (in particular neutrino-nucleus reaction on ^{40}Ar), the single nucleon structure around $^{52,54}\text{Ca}$, the charge radii in Sn and Xe isotopes, and the (first steps towards the) computation of microscopic optical potentials, directly from first principles.

This seminar is organized within the framework of the ESNT project which started in 2018 about "Automated generation and evaluation of the many-body diagrams in the Gorkov's Self-consistent Green's Function formalism".



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