Université Paris-Saclay
IJCLab
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Séminaire de Physique Nucléaire Théorique

Exploring pairing correlations along the nuclear chart (and beyond).

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Nuclear superfluidity is an absolutely fascinating phenomenon : due to a resid- ual interaction, two fermion can couple and form a Cooper pair. The formation of the pairs impact macroscopic properties of the system. This was illustrated in the seminal paper of Bohr, Mottelson and Pines, by inspecting the excita- tion spectra of even-even and odd-odd nuclei. A lot of theoretical work has been done to investigate pairing correlations and their possible impact on the properties of the nuclear system. Despite such an effort several open questions concerning the underlying structure of the pairing interaction is still unknown. How to improve our knowledge ? In my talk, I will focus on the description of pairing properties within Nuclear Energy Density functional theory by illus- trating how particular assumptions on the pairing interaction may have large effects on some particular experimental observables. The talk aims at trigger- ing a discussion between theory and experiment on future plans on how to tackle such a complicated, but definitely fascinating problem.

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