Département de Physique Nucléaire

Séminaires du DPhN

Vendredi 03/04/2015, 11:00-12:00

Bat 703, p 45, CEA Saclay, Orme des Merisiers

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SPhN ESNT

Beyond mean-field calculations for odd-mass nuclei

In the past, beyond mean-field methods, of the type we call multi-reference energy density functional (MR-EDF), had been successfully used for the description of even-even nuclei only [1,2], and the extension to odd-even ones was highly desired.

This seminar will present the development works done for the application of these methods to odd-mass nuclei.
Technically speaking, the project was to achieve the configuration mixing of particle-number and angular-momentum projected triaxial one-quasiparticle states within the generator coordinate method (GCM). This was indeed achieved [3,4]: for the first time, the generator coordinate space was built from self-consistently blocked one-quasiparticle HFB states for odd-mass nuclei. It will explained during the talk.

The method will be illustrated with an application to 25Mg, for which the spectrum and electromagnetic moments are obtained in agreement with the experiment.

[1] M. Bender and P.-H. Heenen, Phys. Rev. C 78, 024309 (2008).
[2] T. R. Rodriguez and J. L. Egido, Phys. Rev. C 81, 064323 (2010).
[3] B. Bally, PhD Thesis (2014), Université de Bordeaux.
[4] B. Bally, B. Avez, M. Bender, and P.-H. Heenen, Phys. Rev. Lett. 113, 162501 (2014); and B. Bally et al., articles in preparation.

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