ID de Contribution: **7** Type: **Non spécifié**

Nonmicroscopic investigations of 3-alpha bosonic states in 12C nucleus

lundi 8 octobre 2012 12:10 (30 minutes)

The transition from descriptions of nuclear-wave functions in terms of A nucleons (fermions) toward those in terms of n < A composite clusters as e.g. particles (bosons) is far from being obvious. However, it represents a very interesting challenge which can help to point out states in which clustering is expected to be strongly dominant as in so-called condensate state, a typical example being the 0+2 in the 12C nucleus, known as the Hoyle state [1].
During this talk, we will mainly focuss on recent investigations of the 12C nucleus performed with a nonmicroscopic -particle model involving local and nonlocal potentials [2]. Faddeev equations formulated in configuration space are used to solve the 3-body problem for bound and resonant states. We demonstrate that the nonlocal potential developed by Z. Papp and S. Moszkowski appears to be particularly well-adapted to study 3 clustering. We point out 12C states of positive-parity which share common features with the 0+2 Hoyle states and are interpreted as 3-condensate states. Several negative-parity states revealing a clear bosonic - particle structure are also obtained. We will conclude this talk with preliminary results obtained with a similar nonmicroscrocopic approach complemented by microscopic calculations for the 16O nucleus.

1. T. Yamada, Y. Funaki, H. Horiuchi, G. R¨opke, P. Schuck, A. Tohsaki, Lecture Notes in Physics 848 (2012) - Springer, Clusters in nuclei -Vol.2.
2. R. Lazauskas, M. Dufour, Phys. Rev. C 84, (2011)

Auteur principal: Mlle DUFOUR, Marianne (Université de Strasbourg)

Co-auteur: Dr LAZAUSKAS, Rimantas (IPHC Strasbourg)

Orateur: Mlle DUFOUR, Marianne (Université de Strasbourg)

Classification de Session: Ab-initio approaches to nuclear structure

Classification de thématique: Ab-initio approaches to nuclear structure