

Continuum coupling correction in Gamow Shell Model

Loosely bound nuclei are currently at the center of interest in nuclear physics in problems related to the limits of stability of nuclear matter and nucleosynthesis. Since nuclear properties are profoundly affected by environment of the many-body continuum representing scattering and decay channels, a simultaneous understanding of the structural and reaction aspects is crucial for understanding of short-lived nucleonic matter.

Attempts to reconcile the nuclear shell model with the reaction theory has led to the development of the shell model for open quantum systems, the Gamow Shell Model (GSM), which change the comprehension of many nuclear phenomena and offers new perspectives for nuclear structure and reaction studies. Recently, near threshold effects have been studied in the $\beta^- p^+$ decay of ^{11}Be using Shell Model Embedded in the Continuum (SMEC). The continuum-coupling induced collectivization of shell model eigenstates is also responsible for the appearance of clustering in near-threshold states.

In my presentation, I shall concentrate on the continuum-coupling energy correction calculated in GSM and, in particular, on its near-threshold behavior as a function of the angular momentum, charge, and number of valence nucleons.

Auteur principal: LINARES FERNANDEZ, Jose Pablo (GANIL)

Co-auteur: PLOSZAJCZAK, Marek (GANIL)

Orateur: LINARES FERNANDEZ, Jose Pablo (GANIL)