Contribution ID: **15** Type: **Oral contribution**

Linking structure and dynamics in (p,pN) reactions induced by Borromean nuclei

Friday, 8 June 2018 14:06 (18 minutes)

One-nucleon removal (p,pN) reactions in inverse kinematics, performed at intermediate energies to increase the mean free path of the proton inside the nucleus, can provide quite clean spectroscopic information on exotic nuclei. The Transfer to the Continuum framework, originally developed for the case of two-body projectiles [1], has been recently extended to describe (p,pN) reactions induced by Borromean (core+N+N) nuclei [2]. In this method, the relative energy distribution of the residual unbound two-body subsystem, which is assumed to retain information on the structure of the initial three-body projectile, is computed by evaluating the transition amplitude for different neutron-core final states in the continuum. These transition amplitudes depend on the overlaps between the original three-body ground-state wave function and the two-body continuum states populated in the reaction, thus ensuring a consistent description of the incident and final nuclei.

We applied the method to the 11Li(p,pn)10Li reaction at 280 MeV/u, obtaining a very good agreement with GSI data [3]. In order to describe the 14Be(p,pn)13Be reaction, in which gamma coincidences from the decay of 12Be provide additional information [4], the effect of core excitations has been incorporated in the structure description. Preliminary results show the sensitivity of the cross sections to the structure input. Other cases of interest include 8He(p,pn)7He, 17Ne(p,2p)16F, or 22C(p,pn)21C.

[1] A. M. Moro, PRC 92 (2015) 044605.
[2] M. Gómez-Ramos, J. Casal, and A. M. Moro, PLB 772 (2017) 115.
[3] Y. Aksyutina et al., PLB 666 (2008) 430.
[4] Y. Kondo et al., PLB 690 (2010) 245.

Summary

Primary authors: Prof. MORO, Antonio M. (Universidad de Sevilla); Dr CASAL, Jesús (ECT*); Mr GÓMEZ-RAMOS, Mario (Universidad de Sevilla)

Presenter: Dr CASAL, Jesús (ECT*)

Session Classification: Session 17