

Study of multinucleon knockout reactions of exotic nuclei in the region of Nitrogen

Tuesday, 28 May 2024 19:30 (90)

Several works focused on light isotopes [1,2,3] have shown a reduction of the cross sections with respect to the theoretical predictions for single-nucleon knockout reactions. These studies have reached different conclusions regarding the dependence of the reduction factor observed of the spectroscopic factor with respect to the N/Z of the projectile. The study of (p,pX) knockout reactions with the R3B versatile setup is a golden opportunity since the inverse kinematics technique can be used for kinematically complete measurements.

Of particular interest is the systematic study of the probability of cluster formation. The successful experiments on stable Sn isotopes [4] indicating the pre-existence of alpha clusters, which are compatible with theoretical predictions [5], have aroused the interest to study this phenomenon also for other clusters such as d, t or ^3He .

This presentation will be focused on deuteron formation and its possible identification with CALIFA [6]. One of the goals is to study the dependence of the cluster formation probability with respect to the mass of the projectile. In addition, the occurrence of deuteron clusters embodies tensor force effects and should be relevant for short-range correlations (SRC) [7].

[1] J. A. Tostevin and A. Gade, Phys. Rev. C 90, 057602 (2014)

[2] M. Gómez-Ramos and A.M. Moro, Phys. Lett. B 785,511 (2018)

[3] L. Atar et al., Phys. Rev. Lett. 120, 052501 (2018)

[4] J. Tanaka, Z.H. Yang et al., Science 371, 260 (2021)

[5] S. Typel, Phys. Rev. C 89, 064321 (2014)

[6] H. Alvarez-Pol, Nucl. Instrum. Methods A 767, 453-466 (2014)

[7] M. Duer et al., Nature 560 620 (2018)

Primary author(s) : FEIJOO FONTÁN, Martina (USC); BARRIÈRE, Antoine (GANIL); Mr. MOZUMDAR, Nikhil (T.U. Darmstadt); Dr. SORLIN, Olivier (GANIL)

Presenter(s) : FEIJOO FONTÁN, Martina (USC)

Session Classification : Poster Session