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Halo nuclei: stepping stones across the drip-line

Thursday, 24 May 2012 16:40 (30 minutes)

In my talk I'd like to present recent results obtained at GSI for the halo nucleus 14Be and it's unbound subsystem 13Be. The structure of these nuclei is a prerequisite to understand the observed structure and angular correlations for the heaviest known Lithium system 13Li [1]. 13Li and 13Be can be produced with relativistic beams by proton and neutron knock-out reactions, respectively, where the 14Be properties can be extracted from a comprehensive missing momentum and spectroscopic analysis. Recently, three data sets were published for 13Be, all with different interpretations of its ground-state structure. From the data obtained at GANIL [2] it is a Breit-Wigner l=0 resonance, it is a virtual s-state [3] populated in the one-neutron knock-out from 14Be at GSI, and finally it is interpreted as a l=1 resonance from data obtained at RIKEN [4]. We have carried out a study of the root-mean-square (r.m.s) momentum of a fragment+n system after one neutron knockout from the Borrome an halo nucleus as a function of the relative energy between neutron and fragment. Results will be shown and discussed in view of the underlying nuclear structure.

[1] H.T. Johansson et al., Nucl. Phys. A847 (2010) 66.
[2] J.L. Lecouey, Few-Body Systems, 34 (2004) 21.
[3] H. Simon et al., Nucl. Phys. A 791 (2007) 267.
[4] Y. Kondo et al., Phys. Lett. B 690 (2010) 245.

Primary author: SIMON, Haik (GSI Helmholtzzentrum für Schwerionenforschung GmbH, Darmstadt)

Presenter: SIMON, Haik (GSI Helmholtzzentrum für Schwerionenforschung GmbH, Darmstadt)

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