Probing Structure Beyond the Neutron Driplines

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The properties of nuclei lying beyond the neutron dripline provide arguably some of the most severe tests of nuclear structure models. In addition, in the case of two-neutron halo nuclei, the spectroscopy of the unbound A-1 system provides essential ingredients for three-body models. Accessing such unbound systems is difficult, if not impossible, when employing stable beams and targets. Moreover, the relatively complex reaction processes involved in multinucleon transfer renders the extraction of spectroscopic information problematic. Recently it has been demonstrated that high-energy, single-nucleon removal from secondary beams can be employed as a spectroscopic tool [1].

In a series of experiments we have studied the unbound nuclei ^{13}Be and ^{16}B via single-proton removal reactions on beams of ^{14}B and ^{17}C [2]. The results of these measurements will be presented and, in the light of simple reaction model considerations, conclusions drawn regarding the structure of ^{13}Be and ^{16}B.

Given the recent interest in ^{5}H [3-5], preliminary results obtained for $t + n + n$ coincidences measured following single-proton removal from a ^{6}He beam [6] will be briefly discussed.

[1] L. Chen *et al.*, Phys. Lett. bf B505 (2001) 21, and refs therein.

[2] J.L. Lecouey, "Etude des systémes nonliés ^{13}Be et ^{16}B", Thèse, Université de Caen, LPCC T 02-03.

[3] A.A. Korsheninnikov *et al.*, Phys. Rev. Lett. **87** (2001) 092501.

[4] L. Chulkov, contribution to this conference.

[5] G.M. Ter-Akopian *et al.*, VII Internation School Seminar,
Dubna, May 2002, unpublished.

[6] G. Normand *et al.*, unpublished.