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Coulomb dissociation of one- and two-neutron halos in halo EFT[1]

BIJAYA ACHARYA, DANIEL PHILLIPS, Ohio University — In neutron halo nuclei the neutron distribution extends significantly beyond the region occupied by the nuclear"core." Halo effective field theory (Halo-EFT) exploits the consequent separation of scales in order to predict relationships between low-energy observables in these systems as a systematic expansion in R_{core}/R_{halo}. This talk will discuss results for the Coulomb dissociation of neutron halo nuclei in this framework. In particular, we consider the Coulomb dissociation of ^{19}C [1]. We compute the reduced transition probability (dB(E1)/dE) for excitation of the bound-state neutrons to the continuum up to N^{2}LO in the Halo-EFT expansion. By comparing the predcition with data from RIKEN [2] we are able to extract accurate results for ^{19}C's one-neutron separation energy and asymptotic normalization coefficient. Good agreement between data and Halo-EFT is also found for the longitudinal momentum distribution of ^{19}C. Results from ongoing work to extend ths calculation to two-neutron halos will also be presented [3].

[1] B Acharya and D R Phillips, Nucl. Phys. A. **913**, 103 (2013).
[2] T Nakamura et al., Phys. Rev. Lett. **83**, 1112 (1999).
[3] B Acharya, P Hagen, H -W Hammer and D R Phillips, in preparation.

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