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# 1pxn removal cross sections of light exotic nuclei and the role of final state interactions in projectile fragmentation

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Reaction cross sections of exotic nuclei have given rise to several interesting discoveries like halo-structure. Reaction cross sections are model-independent observables which can be obtained from inclusive measurements.
We have systematically measured 1pxn removal cross sections for (10,12-18)C and (10-15)B isotopes impinging at relativistic energies onto a carbon target using one experimental set-up, thus reducing (systematic) uncertainty.
A number of very successful models exist for describing reaction cross sections, but those are benchmarked against stable beam experiments. We test the abrasion-ablation model ABRABLA07 [1] and EPAX [2] with our consistent dataset of cross sections from exotic nuclei. We also study the dependence of ABRABLA07 on the average excitation energy induced per abraded nucleon using our data and complementary results from literature.
We see an interesting and unexpectedly regular behaviour of the fragmentation cross sections –usually preferring the production of a stable or semi-magic daughter nucleus.
We find that the average excitation energy per abraded nucleon has to be decreased for our light nuclei. Additionally we find a mass dependence of the best fit excitation energy. Nevertheless the data also shows that the mass is not the only parameter influencing the average induced excitation energy per abraded nucleon. By lowering the average excitation energy, the experimental data are reproduced surprisingly well, especially since the model is intended for medium-mass to heavy nuclei.

[1] J.-J. Gaimard and K.-H. Schmidt , Nucl. Phys. A531, 709 (1991).
[2] K. Sümmerer and H. Weick (C translation), [C source code] EPAX Version 3 (2013).

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