EXPERIMENTS ON ^{8}B AND ^{23}O at GSI

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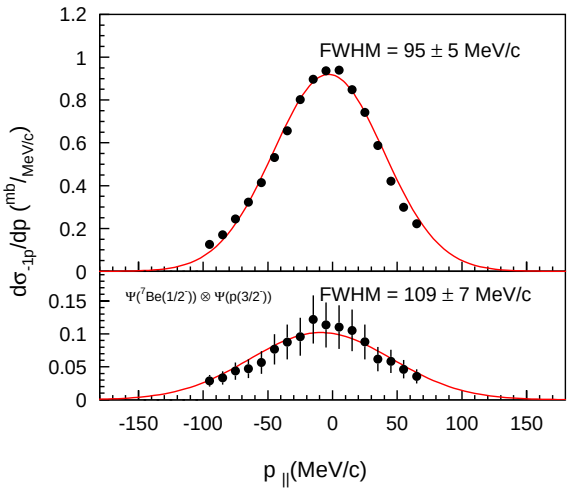
The fragment separator FRS(GSI) was used as an energy-loss spectrometer to measure momentum distributions of relativistic fragments after one-nucleon removal for different secondary beams in coincidence with gamma rays from the de-excitation of those fragments. One-nucleon removal cross-sections were also measured with the same experimental setup. The combination of those measurements has been used to extract information about the nuclear structure in a wide range of species in the sd-shell and has allowed to test theoretical predictions for the nuclear structure of halo nuclei.

The proton-rich isotope ^{8}B is presented to show the power of the experimental technique that combines in-beam gamma spectroscopy at relativistic energies with secondary nuclear reactions. We show in the following picture the measured inclusive longitudinal momentum distribution of the ^{7}Be fragments (upper panel) and exclusive contribution of the ^{7}Be in its first excited state (lower panel), after one proton removal on a C target. These results allow an experimental confirmation of the ^{8}B ground state structre.



New and interesting experimental results on momentum distributions and one-nucleon removal cross-sections in coincidence with gamma ray detection for neutron-rich N, O and F isotopes at relativistic energies will also be presented and discussed in detail. It is of particular interest the results concerning the ^{23}O that allow to experimentally assign the spin and parity of its ground state.