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Form factor studies for analyses of transfer reactions

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We present spectroscopic information provided in single nucleon transfer reactions on the valence shells of nuclei with very large neutron/proton asymmetry. The cross sections for nucleon removal were compared to shell model predictions. The weak dependence on asymmetry contrasts with results of knock-out experiments at higher incident energy.

The neutron deficient ^{14}O has been first investigated. Both the single neutron and proton pick-up cross sections from a deuterium target were measured with the MUST2 array coupled to the magnetic spectrometer VAMOS at GANIL and the ^{14}O SPIRAL beam at 18 MeV/nucleon. ^{14}O with a large neutron/proton asymmetry $\Delta S = |\text{Sn}-\text{Sp}| \sim 18$ MeV is a good candidate to study the evolution of the cross sections for the transfer of valence nucleons in deeply or weakly bound orbitals. Previous results obtained in direct kinematics with ^{16}O and ^{18}O were included in the data set. Different prescriptions for the form factors (Saxon Woods and ab-initio form factors) have been used and tested. The sensitivity on the final results will be shown.

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