# Quasielastic Proton Knockout from p-Shell Nuclei

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Direct nucleon knockout reactions allow for detailed study of the wave function of valence nucleon and its spectroscopic factor (SF). The latter is a measure of the deviation from the shell model description due to long- and short-range $NN$ correlations. However, the extraction of SF from experimental data strongly depends on the type of the initial- and final-state interactions (ISI/FSI) used. In this talk, this will be demonstrated for the case of quasielastic proton knockout, $^{12}\mathrm{C}(p,2p)^{11}\mathrm{B}$, with outgoing $^{11}\mathrm{B}$ in the ground state and low-lying excited states measured at GSI in inverse kinematics at 400 MeV/nucleon. The calculations have been performed on the basis of the translationally-invariant shell model with configuration mixing. The ISI and FSI have been taken into account in the eikonal approximation. The calculation of ISI and FSI with vacuum $NN$ cross section is consistent with full occupation of the valence $p$-shell protons, while using the in-medium total $NN$ cross section leads to the SF of about 0.6. It is suggested that the measurements of the quasielastic knockout induced by hard $pp \to pp$ scattering at higher beam energies would be free of the uncertainties due to in-medium effects and can be used for an unambiguous determination of the SF.