

# Relativistic predictions of polarization phenomena in exclusive proton-induced proton-knockout reactions

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Exclusive proton-induced proton-knockout reactions are ideal reactions for studying the topical question of how the free nucleon-nucleon (NN) interaction is modified by the presence of the surrounding nuclear medium in nuclei.

The Stellenbosch Nuclear Theory group has developed a relativistic (Dirac) distorted wave model for the interpretation of complete sets of  $(p,2p)$  polarization transfer observables measured at intermediate incident proton energies. Model predictions will be compared to recent polarization data for exclusive proton-induced proton-knockout reaction measured at RCNP (Osaka, Japan), PNPI (Gatchina, Russia), as well as at iThemba LABS in South Africa at incident proton energies between 200 MeV and 1 GeV. The dramatic, and somewhat surprising, effect of relativity on spin observables will be demonstrated. In addition, the effect of the nuclear medium on the NN interaction, as probed by  $(p,2p)$  reactions, will be discussed. Results will also be compared to corresponding predictions based on the nonrelativistic Schrödinger equation.