Technical Note
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Missing Momentum in γ, p kinematics on ^{9}Be

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Abstract

In designing a kinematic fitter for Radphi, a decision must be made regarding how to handle the unmeasured momentum of the nucleus in the initial and final states. In the quasi-elastic region, to a good approximation these two are the same. That is, the A-1 nucleons interact weakly with the outgoing nucleon, so as to insure momentum conservation but not to appreciably affect the final-state proton momentum. In this limit the nuclear cross section factorizes into a γ, p cross section times a nuclear structure function which measures the momentum distribution averaged over all occupied proton levels in the nucleus. In setting up a kinematic fit of the measured momenta in the final state, it is convenient to replace the nuclear structure function with a delta function, equivalent to the replacement of the nuclear target with hydrogen. The purpose of this study is to investigate the size of the errors associated with this approximation in the quasi-elastic regime, and to look for any bias it may introduce to the fit results.

(under construction)