

**Absolute Normalization of the Three-Nucleon
Transfer Reactions Cross Section in the
Distorted-Wave Born Approximation
Formalism.**

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Abstract:

The three-nucleon transfer reaction cross section form factor for direct pick-up reactions (p,α) and (n,α), using DWBA formalism and shell model basis states, is obtained following an approach analogous to that by Towner and Hardy. Explicit calculations, with gaussian form for the interaction, are performed on the portion of the form factor which depends on the α -particle wave function and on the interaction potential

The main emphasis is directed towards carrying out exact calculations that avoids drastic approximations in the two-body interaction potential, and such approximation as the point-alpha approximation and other simplifications of the α -particle wave function as it has been successfully carried out by Amusa for two-nucleon pick-up reactions induced by light ions. Two-body interaction parameters which reproduce low-energy scattering data very well are employed in computing values of the normalization and spectroscopic factors that are extracted from the form factor.

Keywords: Nucleon transfer reactions/ gaussian form/ normalization/ spectroscopic factors

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