Abstract Submitted
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Exploring R-matrix ideas for the description of one-nucleon transfers to resonance states[1] JUTTA E. ESCHER, Lawrence Livermore National Laboratory, AKRAM M. MUKHAMEDZHANOV, Texas A&M University, IAN J. THOMPSON, Lawrence Livermore National Laboratory — Deuteron-induced reactions, in particular (d,p) one-neutron transfer reactions, have been used for decades to investigate the structure of nuclei. These reactions, carried out in inverse kinematics, will play a central role in the study of weakly-bound systems at modern radioactive beam facilities. While the theoretical framework and its computational implementation for describing (d,p) reactions have seen much progress over the decades, open questions remain and need to be addressed, including the proper treatment of transfers to resonance states. Recently, Mukhamedzhanov [PRC 84, 044616 (2011)] proposed a novel approach that describes transfers to both bound and resonance states. The new formalism, which is general enough to include deuteron breakup, formulates the cross section in terms of a dominant surface term that can be expressed in terms of R-matrix parameters. Here we test some of the ideas underlying the proposed formalism, compare calculations to measured cross sections, and discuss implications.

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