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Moving Towards a State of the Art Charge-Exchange Reaction Code[1] TERRI POXON-PEARSON, FILOMENA NUNES, National Superconducting Cyclotron Laboratory/Michigan State University, GREGORY POTEL, National Superconducting Cyclotron Laboratory — Charge-exchange reactions have a wide range of applications, including late stellar evolution, constraining the matrix elements for neutrinoless double β-decay, and exploring symmetry energy and other aspects of exotic nuclear matter [1,2]. Still, much of the reaction theory needed to describe these transitions is underdeveloped and relies on assumptions and simplifications that are often extended outside of their region of validity [3]. In this work, we have begun to move towards a state of the art charge-exchange reaction code. As a first step, we focus on Fermi transitions using a Lane potential in a few body, Distorted Wave Born Approximation (DWBA) framework. We have focused on maintaining a modular structure for the code so we can later incorporate complications such as nonlocality, breakup, and microscopic inputs. Results using this new charge-exchange code will be shown compared to the analysis in [2] for the case of 48Ca(p,n)48Sc. [1] R. G. T. Zegers et at., Phys. Rev. Lett. 99 (2007) 202501. [2] Danielewicz et al., Nucl. Phys. 958 (2017) 147. [3] T.N. Taddeucci et al., Ncl. Phys. A469, 125 (1987).

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