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Charge-exchange reactions: a tool for extracting weak rates for stellar evolution[1] REMCO G.T. ZEGERS, NSCL, Department of Physics and Astronomy and the Joint Institute for Nuclear Astrophysics, Michigan State University — A variety of charge-exchange (CE) reactions are used to extract Gamow-Teller (GT) strengths in nuclei of relevance for astrophysics, in particular late stellar evolution. An important feature of CE reactions at bombarding energies above 100 MeV/n is that, once calibrated using beta decay, GT strengths over a wide excitation-energy range can be extracted model-independently. At the NSCL, the (t,3He) reaction on stable targets is used to extract strengths in the beta+ direction. Moreover, experimental techniques to extract GT strength away from the valley of stability (using the (7Li,7Be) and (p,n) reactions) are being developed. The presentation will focus on the experimental program at the NSCL and the associated theoretical efforts concerning the CE reactions and GT strength extraction.

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