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Studying Electron-Capture on ^{64}Zn in Supernovae with the (t,^{3}He) Charge-Exchange Reaction[1] G.W. HITT, SAM M. AUSTIN, D. BAZIN, A. GADE, C.J. GUESS, D. GALAVIZ-REDONDO, Y. SHIMBARA, C. TUR, R.G.T. ZEGERS, Michigan State University and National Superconducting Cyclotron Laboratory, M. HOROI, Central Michigan University, M.E. HOWARD, E.E. SMITH, The Ohio State University — A secondary, 115 MeV/u triton beam has been developed at NSCL for use in (t,^{3}He) charge-exchange(CE) reaction studies. This (n,p)-type CE reaction is useful for extracting the full Gamow-Teller (GT) response of the nucleus, overcoming Q-value restrictions present in conventional beta-decay studies. The strength (B(GT)) in ^{64}Cu has been determined from the absolute cross section measurement of ^{64}Zn(t,^{3}He) near zero-degrees, exploiting an empirical proportionality between cross section and B(GT). The detailed features of the B(GT) distribution in a nucleus has an important impact on electron-capture (EC) rates in Type Ia and Core-Collapse supernovae. The measured B(GT) in ^{64}Cu is directly compared with the results of modern shell model interactions which are used to calculate the GT contribution to EC on nuclei in supernova simulations.

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