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Inelastic Scattering of Alphas on Mg-24 as a Surrogate for Stellar Carbon Burning JUSTIN MUNSON, UC-Berkeley, LBNL, ERIC NORMAN, UC-Berkeley, LLNL, JASON BURKE, LLNL, LARRY PHAIR, LBNL, ROBERT CASPERSON, LLNL, MATT MCCLESKEY, Texas A&M, PERRY CHODASH, UC-Berkeley, LLNL, RICHARD HUGHES, University of Richmond, ELLEN MCCLESKEY, Texas A&M, ROBY AUSTIN, Saint Mary's University, ANTTI SAASTAMOINEN, ALEX SPIRIDON, ROMAN CHYZH, Texas A&M, SHAMSUZZOHA BASUNIA, LBNL, TIMOTHY ROSS, University of Richmond, JENNIFER RESSLER, LLNL — Inelastic excitation of ^{24}Mg is used as a surrogate for $^{12}C+^{12}C$ burning at stellar energies. The branching ratio for $^{12}C +^{12} C \rightarrow^{20} Ne + \alpha$ and $^{12}C +^{12} C \rightarrow^{23} Na + p$ is determined by the decay channel ratio of the excited ^{24}Mg. Experiments were performed using the 88" cyclotron at LBNL and the 88" cyclotron at the Texas A&M Cyclotron Institute using a 40 MeV alpha beam on a Mg target. The scattered alpha and the ejected alpha or proton were detected using Si detectors while gammas from the often excited daughters were detected using germanium "clover" detectors. This is called the STARS/LiBerACE array at LBNL and the STARLiTe array at Texas A&M. This work was supported in part at LBNL by the Director, Office of Energy Research, Office of High Energy and Nuclear Physics, Division of Nuclear Physics, of the U.S. Department of Energy under Contract DE-AC02-05CH11231; LLNL under Contract DE-AC52-07NA27344; and Texas A&M under DOE Office of Nuclear Physics grant DE-FG02-93ER40773 and NNSA grant DE-FG52-09NA29467.

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