Abstract Submitted
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Experimental results for studies of the ^{40}Ca(α,γ)^{44}Ti reaction rates[1] DANIEL ROBERTSON, University of Notre Dame, HANS-WERNER BECKER, Ruhr-Universität Bochum, MATT BOWERS, PHILIPPE COLLON, JOACHIM GOERRES, WENTING LU, CHRIS SCHMITT, MICHAEL WIESCHER, University of Notre Dame — Observational studies of galactic γ emitters such as ^{44}Ti have highlighted their use in nucleosynthesis studies of massive stars in their late stage stellar evolution and final explosive demise in core collapse supernova events. Models used in the simulation of such γ emitters rely heavily upon reliable reaction rates for both the creation and annihilation of these isotopes over large temperature ranges. The production of ^{44}Ti mainly through the ^{40}Ca(α,γ)^{44}Ti reaction is thought to take place primarily in the α-rich freeze out phase of a core collapse supernova. However, current supernova models predict lower ^{44}Ti to ^{56}Ni ratios than observed, creating a need for more information about its production mechanism. A number of previous studies include prompt γ-ray measurements, recoil mass separator experiments and the use of AMS, all giving greatly different reaction rates. Aiding in the refinement of these needed rates, the results of experiments at the DTL, Bochum and NSL, Notre Dame will be presented against the backdrop of these previous measurements.

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