

Abstract Submitted
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A New Measurement of the E1 Component of the $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$ Reaction X.D. TANG, M. NOTANI, K.E. REHM, I. AHMAD, J. GREENE, A.A. HECHT, D. HENDERSON, R.V.F. JANSSENS, C.L. JIANG, E.F. MOORE, N. PATEL, R.C. PARDO, G. SAVARD, J.P. SCHIFFER, S. SINHA, Argonne National Laboratory, M. PAUL, Hebrew University, L. JISONNA, R.E. SEGEL, Northwestern University, C. BRUNE, Ohio University, A. CHAMPAGNE, University of North Carolina, A. WUOSMAA, Western Michigan University — During the past few years we have been involved in a measurement of the E1 component of the $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$ reaction. Using a new approach with a set of high acceptance ionization chambers, we have measured the beta-delayed alpha decay in ^{16}N . The subthreshold 1^- state, which dominates the S-factor $S(\text{E1})$ at astrophysical energies, produces a small interference peak in the alpha spectrum, whose strength is sensitive to $S(\text{E1})$. The data have been analyzed using extrapolations obtained from R-matrix theory. The results from two independent runs will be presented and compared to previous experiments. The contributions from systematic uncertainties as well as the sensitivity of $S(\text{E1})$ to various R-matrix parameters will be discussed. This work was supported by the US Department of Energy, Nuclear Physics Division, under contract No. W-31-109-ENG-38 and by the NSF Grant No. PHY-02-16783 (Joint Institute for Nuclear Astrophysics).

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