Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

New Measurement of the E1 Component of the ^{12}C(α,γ)^{16}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, 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, U. of North Carolina, A. WUOSMAA, Western Michigan University — The radiative capture reaction ^{12}C(α,γ)^{16}O is an important process in nuclear astrophysics. Since the cross sections at red-giant temperatures are extremely small ($\sim 10^{-17}$ b) indirect techniques have to be used to determine its astrophysical reaction rate. The E1 component of this rate is best determined through a measurement of the beta-delayed alpha decay of ^{16}N. For a measurement of this decay we have built a system of high-acceptance gas-ionization detectors, which are insensitive to beta particles that limited earlier measurements. Beam impurities that affected one of the earlier experiments were eliminated through the choice of the ^{16}N production technique. New results from this experiment and comparisons with earlier data will be presented. This work was supported by the US Department of Energy, Nuclear Physics Division, under contract No. W-31-109-ENG and by the NSF Grant No. PHY-02-16783 (Joint Institute for Nuclear Astrophysics).

Karl Rehm
Argonne National Laboratory

Date submitted: 26 May 2005 Electronic form version 1.4