Abstract Submitted
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A precision measurement of the ^{3}He(α,γ)^{7}Be astrophysical S-factor T.A.D. BROWN, K.A. SNOVER, D.W. STORM, C. BORDEANU, D. MELCONIAN, A.L. SALLASKA, S.K.L. SJUE, S. TRIAMBAK, A.M. CRISP, J.D. LOWREY, K. MICHNICKI, P. PEPLOWSKI, J. SIBILLE, University of Washington — The ^{3}He(α,γ)^{7}Be reaction is the gateway to the ppII and ppIII branches, providing the principle route to energetic neutrino production in the Sun. The uncertainty on the accepted value of S(0) for this reaction is currently the largest important nuclear physics uncertainty (+/- 10%) in the Solar Model [1]. A more precise value of $S_{34}(0)$ would bring an improvement in solar neutrino flux calculations, and in predictions of ^{7}Li production in Big-Bang Nucleosynthesis which are currently significantly higher than observed ^{7}Li abundances [2]. Precision measurements of S_{34}(E) have been made at eight different energies between E_{CM} = 329 and 1235 keV, using the terminal ion source on the Van-de-Graaff accelerator at the University of Washington. The prompt gamma-ray yield and the ^{7}Be activity have been measured at each energy in the same irradiation, permitting two different methods for determining S_{34}(E). This presentation discusses the experimental details of these measurements, the analysis of the data and our results for $S_{34}(0)$.
[1] E. G. Adelberger *et al.*, Rev. Mod. Phys. **70** 4 (1998) 1265
[2] P. Bonifacio *et al.*, Astron. Astrophys. **390** (2002) 91

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