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Analyzing Sources of Uncertainty in a Precision Measurement of ^{3}He$(\alpha,\gamma)^7$Be[1] A.M. CRISP, T.A.D. BROWN, C. BORDEANU, K.A. SNOVER, D.W. STORM, Center for Experimental Nuclear Physics and Astrophysics, University of Washington, Seattle, WA 98195 — The ^{3}He$(\alpha,\gamma)^7$Be reaction plays an important role in the solar p-p chain. The uncertainty in this reaction rate is currently the largest nuclear physics uncertainty in solar model calculations of the neutrino flux from the decay of both ^{7}Be and ^{8}B in the sun. At CENPA we are measuring the low energy cross section for this reaction at center-of-mass energies of 1.2 MeV and lower, using a ^{3}He gas cell with a thin nickel entrance window. The goal of this experiment is to determine the astrophysical S-factor to $\pm 5\%$ or better, from measurements of both the prompt γs and the ^{7}Be activity produced in the same irradiation. In order to reach this goal one must measure and minimize the important systematic errors. We will discuss beam heating of the target gas, sources of background radiation, and detector efficiency, as well as other important aspects of the experimental technique.

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