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New measurement of Γ_π/Γ for the 0_2^+ (7.65 MeV) state in ^{12}C N.J. GOODMAN, J. BOS, J.C. LIGHTHALL, S.T. MARLEY, J. SNYDER, A.H. WUOSMAA, Western Michigan University, C. TUR, SAM M. AUSTIN, E. ESTRADA, G. LORUSSO, Michigan State University and Joint Institute for Nuclear Astrophysics — The rate of ^{12}C formation through the well known "triple- alpha" process is determined by the radiative partial width of the excited 0^+ state at 7.65 MeV in ^{12}C. Experimentally, the uncertainty in this quantity is determined from the radiative branching ratio, the partial width for e^+e^- decay, and the pair branching ratio. The current uncertainty in the 3-α rate is dominated by that for the e^+e^- branching ratio which is 9.2%. We have performed a new measurement of this quantity aimed at reducing this uncertainty to 5%. 10.4 MeV protons from the Western Michigan University Tandem Van de Graaff accelerator bombarded a 100 μg/cm^2 ^{12}C target, exciting the 0^+ 7.65 MeV state. Protons were detected at backward angles using two 1 mm thick silicon detectors, and coincident e^+ and e^- were detected with an array of plastic-scintillator detectors where the sensitivity of the device to photons was reduced by dividing the detector into a thick outer block, and thin inner sleeve. The performance of the detector and preliminary results will be discussed. Work supported by the U. S. Department of Energy under contract number DE-FG02-ER41230 (WMU) and the U. S. National Science Foundation, contract numbers PHY06-06007 (MSU) and PHY02-16783 (JINA).

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