Abstract Submitted
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**Improving the Rate of the Triple Alpha Reaction**[1] C. TUR, NSCL, MSU, A. WUOSMAA, WMU, S.M. AUSTIN, NSCL, MSU, J. LIGHTHALL, S. MARLEY, N. GOODMAN, J.J. BOS, WMU, A. HEGER, LANL, S.E. WOOSLEY, UCSC, R. HOFFMAN, LLNL; and JINA — The rate of the triple alpha process is known with an accuracy of about 12%. Variations within those errors can significantly change the size of the iron core in core-collapse supernovae and double the surface abundance of $^{12}C$ in light ABG stars. Studies being done using the code KEPLER show that changing the triple alpha rate or the rate of the $^{12}C(\alpha,\gamma)^{16}O$ reactions can significantly affect the production of the medium weight elements in core-collapse supernova progenitors. Hence, the experiment aims at reducing the uncertainty on this rate to about 6% through an accurate measurement of the pair branch for the Hoyle state excited through inelastic scattering of 10.6 MeV protons from the Tandem accelerator at WMU. The pair branch is given by the ratio of the number of $e^+e^-$ pairs in the plastic scintillators in coincidence with protons scattered at 135 degrees in the lab to the total number of such protons. The gamma ray background is considerably reduced by a coincidence requirement between a thin scintillator tube and the large block of scintillator surrounding it. The experimental status will be presented.

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