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Investigating D-T Reaction Spectra with the Gas Cherenkov Detector MICHAEL A. HUFF, YONG HO KIM, AARON MCEVOY, CARLTON S. YOUNG, JOE M. MACK, LANL, HANS W. HERRMANN, LLNL, COLIN J. HORSFIELD, AWE, LANL TEAM, LLNL TEAM, AWE TEAM — In this study, a new analysis of the gamma ray spectra of the D-T fusion reaction using a Gas Cherenkov Detector (GCD) is presented. The D-T reaction is an essential process to understand for the future of fusion science. The reaction produces a He^{5*} nucleus that usually decays into a $\text{He}^4 + \text{n}$. It has been seen that this reaction produces a 16.75 MeV gamma ray .0025% of the time. The Gamma Ray History (GRH) group at Los Alamos proposes that there is an even less often occurrence where a gamma ray of around 12 MeV is produced. As the truth of this statement would affect the future potential yield of fusion reactors using D-T fuel, it is worth investigating. D-T spectra were obtained by detecting the produced gamma ray with the GCD at the University of Rochester OMEGA laser facility. A GCD response curve, calculated by the Monte Carlo modeling software ACCEPT, was used to forward convolve theoretical spectra into what the theoretical curves would have looked like in the GCD data. Results are presented.

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