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Monte Carlo Simulation of the DRAGON Recoil Mass Spectrometer End Detectors LAURELLE VELOCE, J. FALLIS, C. RUIZ, TRIUMF, S. REEVE, SFU — DRAGON (Detector of Recoils And Gammas Of Nuclear reactions), located at TRIUMF in Vancouver, BC, is designed to study radiative capture reactions relevant in astrophysical nucleosynthesis processes. These types of reactions help us understand the production of heavy elements in the Universe. An accelerated beam of a given isotope is sent through a gas target where the reactions take place. Magnetic and electrostatic dipoles separate the recoils from the original beam particles, selecting particles according to charge and mass. The products of the nuclear reactions are then detected at the end of DRAGON by heavy ion detectors, which constitute two micro channel plate (MCP) detectors for time of flight measurements, used in conjunction with a Double Sided Silicon Strip Detector (DSSSD) or an ionization chamber (IC). The DSSSD gives information on number of counts, total energy deposited, and position while the IC measures the number of counts and the energy deposited as the particle travels through the chamber. In order to determine which set up is ideal for a given reaction and energy range, we have developed a Monte Carlo simulation of these end detectors. The program simulates both recoil and beam particles, and takes into account effects such as straggling and pulse height defect. Reaction kinematics in the gas target are also considered. Comparisons to recent experimental data will be discussed.

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