Timing resolution and detection efficiency of the St. George detector system1 LUIS MORALES, JACQUES LAURENCE, SUNIL KALKAL, JERRY HINNEFELD, Indiana University South Bend, HYO SOON JUNG, MANOEL COUDER, University of Notre Dame — The St. George recoil mass separator at the University of Notre Dame will be used to study (α, γ) reactions of astrophysical interest. A detection system was developed for the St. George recoil mass separator by Indiana University South Bend that will utilize energy and time-of-flight to separate reaction products from residual unreacted beam particles. The detection system utilizes two transmission detectors in which secondary electrons produced by the passage of an ion through a thin foil are deflected by electric and magnetic fields onto a microchannel plate (MCP) detector, which registers timing measurements. A silicon strip detector is used to measure the ion’s kinetic energy. Measurements were conducted with an alpha source of Am-241 and Gd-148 to determine the MCP efficiency and timing resolution. The best values achieved to date are 75% for efficiency and 550 ps for timing resolution. The program SIMION was used to investigate further the effect of varying the voltages applied to the foil, the field-shaping electrodes, and the MCP detector, on the efficiency and timing resolution.

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