

Abstract Submitted
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Canadian Penning Trap Mass Measurements using a Position Sensitive MCP¹ TRENTON KUTA, ANI APRAHAMIAN, SCOTT MARLEY, ANDREW NYSTROM, University of Notre Dame, JASON CLARK, ADRIAN PEREZ GALVAN, TSVIKI HIRSH, GUY SAVARD, Argonne National Laboratory, RODNEY ORFORD, McGill University, GRAEME MORGAN, University of Manitoba — The primary focus of the Canadian Penning Trap (CPT) located at Argonne National Lab is to determine the masses of various isotopes produced in the spontaneous fission of Californium. Currently, the CPT is operating in conjunction with CARIBU at the ATLAS facility in an attempt to measure neutron-rich nuclei produced by a 1.5Curie source of Californium 252. The masses of nuclei produced in fission is accomplished by measuring the cyclotron frequency of the isotopes circling within the trap. This frequency is determined by a position sensitive MCP, which records the relative position of the isotope in the trap at different times. Using these position changes over time in connection with a center spot, angles between these positions are calculated and used to determine the frequency. Most of the work currently being conducted on the CPT is focused on the precision of these frequency measurements. The use of traps has revolutionized the measurements of nuclear masses to very high precision. The optimization methods employed here include focusing the beam in order to reduce the spread on the position of the isotope as well as the tuning of the MR-ToF, a mass separator that is intended on removing contaminants in the beam.

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