



Status of the Canadian Penning trap mass spectrometer at CARIBU

The Canadian Penning trap (CPT) is currently located at Argonne National Laboratory in the CARIBU facility where intense beams of neutron-rich nuclei are produced from the spontaneous fission of ^{252}Cf . The focus of the current CPT campaign is to provide precision mass measurements of nuclides involved in the astrophysical r-process. To date more than 110 nuclides have been measured to an average mass precision of $\delta m/m \approx 10^{-7}$ using the time-of-flight ion-cyclotron-resonance method. At CARIBU this technique only allows the CPT to probe nuclides with half-lives longer than $\sim 200\text{ms}$ and fission branches larger than $5 \times 10^{-4}\%$. An upgrade of the CPT detector system to a phase-imaging technique is currently underway which will shorten measurement cycles by a factor of 5-10, allowing us to probe nuclei 1-3 neutrons further from stability than is currently possible.

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