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Design and Status of a Multi-Reflection Time-of-Flight Mass Separator for the CHIP-TRAP Penning Trap Mass Spectrometer at Central Michigan University[1] R BHANDARI, MH GAMAGE, ND GAMAGE, M REDSHAW, Central Michigan University, P SNOAD, University of Surrey — At Central Michigan University (CMU), we are developing the CMU High Precision Penning trap (CHIP-TRAP), with the aim of performing high-precision mass measurements on stable and long-lived radioactive isotopes. CHIP-TRAP utilizes a laser ablation source and a Penning ion trap source to produce ions from solid and gaseous samples, respectively. In either case, contaminant ions are produced along with the ions of interest. To increase efficiency and sensitivity to ions produced in small quantities, such as radioactive ions, contaminant ions must be removed before they reach the Penning trap. To this end, we are implementing a multi-reflection time-of-flight mass separator (MR-TOF-MS) between the ion sources and Penning trap. Ions confined in the MR-TOF-MS are reflected between electrostatic mirror electrodes, increasing their effective path length and separating bunches of ions based on their m/q ratio. After they are released from the MR-TOF-MS, a Bradbury-Nielsen gate will pass only the ions of interest. In this presentation, I will discuss the design of the MR-TOF-MS, present the analysis of simulations to optimize the electrode voltages, and provide an update on the current status of the installation and commissioning of the recently assembled MR-TOF-MS

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Ramesh Bhandari
Central Michigan University

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