Abstract Submitted
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The Ion Surfing Transport Method for Beam Thermalization Devices[1] AMANDA GEHRING, MAXIME BRODEUR, National Superconducting Cyclotron Laboratory at Michigan State University, GEORG BOLLEN, Facility for Rare Isotope Beams at Michigan State University, DAVID MORRISSEY, STEFAN SCHWARZ, National Superconducting Cyclotron Laboratory at Michigan State University — Projectile fragments can be thermalized in buffer gas to supply rare ions to low energy experiments. We present here studies of "ion surfing" [1], a new method for transporting ions through gas-filled devices that use a RF gradient to repel the ions from the walls. Instead of relying on a fixed potential gradient to guide the thermal ions through the length of the cell, the ions are transported by a traveling wave superimposed on the RF field. The travelling wave is formed by an oscillating sinusoidal field applied to repeating sets of four electrodes. The field on each subsequent electrode is offset by 90 degrees in phase. Transport efficiency and velocity measurements were performed for rubidium and potassium ions over a wide range of conditions. With the optimal parameters currently attainable, >90% efficient transport over 10 cm at 80 mbar was observed for Rb and K ions with max velocities of 75 m/s and 50 m/s, respectively. The measurements were conducted in preparation for the cyclotron gas cell at the National Cyclotron Laboratory at Michigan State University. We will present the results of the latest measurements and comparisons to detailed simulations.

[1] G. Bollen, Int. J. Mass Spect. **299** (2011) 131

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