Abstract Submitted
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Towards Experimental Determination of Ionization Rates and Ion Velocity Distributions in ^{9}Be[1] H. M. KNAACK, J. KELLER, S. C. BURD, NIST, University of Colorado, Boulder, J. P. PENTTINEN, E. KANTOLA, M. GUINA, Tampere University, D. LEIBFRIED, D. H. SLICHTER, A. C. WILSON, NIST — Surface-electrode ion traps are a promising technology for scaling up quantum information processing experiments, but their relatively shallow trap depths can make ion loading less efficient. To counteract this loss in efficiency, it is advantageous to understand the process more quantitatively. To this end we have built a dedicated test chamber with a channel electron multiplier to measure the quantity and velocity distribution of beryllium ions produced in vacuum via different schemes. One such scheme uses a novel source of laser light at 235 nm for photoionization of neutral beryllium atoms. This light is produced by frequency-quadrupling an infrared VECSEL to produce more than 50 mW of light at 235 nm.

[1]NIST Quantum Information Initiative

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