

Abstract Submitted
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Photoionization loading of barium ion traps. ADAM STEELE, LAYNE CHURCHILL, PAUL GRIFFIN, MICHAEL CHAPMAN, Georgia Institute of Technology — We demonstrate a simple and effective technique for photoionization loading barium ions into a linear trap. Photoionization allows isotope selectivity, greater loading efficiency, and eliminates the charging of insulators in the trapping region, typical of electron impact ionization. Two-step photoionization of barium is accomplished using an intercombination line in neutral barium ($5s2^1S_0 \rightarrow 6s6p^3P_1, \lambda = 791 \text{ nm}$) followed by excitation above the ionization threshold using a nitrogen gas laser ($\lambda = 337 \text{ nm}$). Isotopic selectivity is achieved by near doppler-free excitation of the triplet $6s6p^3P_1$ state. Application of the technique to a barium ion-trap cavity QED experiment will be discussed.

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