

Abstract Submitted
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Precision Atomic Masses of Strontium and Ytterbium RAMAN

RANA, ANDREW ZARRELLA, EDMUND MYERS, Florida State University, Department of Physics — Currently the second most precise value for the fine structure constant is derived from “photon-recoil” measurements of $h/M(Rb)$ combined with measurements of the Rydberg constant, atomic transition frequencies, and atomic masses of the electron and Rubidium. An improved value for alpha using this method will enable the combination of theory and experiment for the g -factor of the electron, which produces the most precise value for alpha, to provide a further improved test of QED. Besides the alkalis, isotopes of Sr and Yb make promising candidates for photon-recoil measurements of $h/M(atom)$. Using single-ion, cryogenic precision Penning trap techniques, we are measuring their atomic masses with the aim of a precision of 0.1ppb, a factor of 100 or more improvement over current values.

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