Atomic masses of the alkalis, oxygen isotopes, and the dipole of a triatomic ion\textsuperscript{1} BRIANNA MOUNT, MATTHEW REDSHAW, EDMUND MYERS, Florida State University — By measuring cyclotron frequency ratios of multiply charged ions simultaneously trapped in a Penning trap we have obtained improved atomic masses for $^{39,41}$K, $^{85,87}$Rb and $^{133}$Cs. Our results for Rb and Cs have application to ongoing measurements of $\hbar/m$ (alkali) for the fine-structure constant. We have also measured the masses of $^{17,18}$O, with application to an isotope-independent global fit of precision ro-vibrational molecular spectroscopic data of carbon monoxide [1]. By measuring cyclotron frequency shifts due to polarizability, we have also measured the dipole moment of the triatomic molecular ion HCO\textsuperscript{+}. [1] H.S.P. Mueller, et al., unpublished.

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