

Abstract Submitted  
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**Frequency-dependent polarizabilities of alkali atoms from ultra-violet through infrared spectral regions** BINDIYA ARORA, MARIANNA SAFRONOVA, University of Delaware, CHARLES W. CLARK, National Institute of Standards and Technology, Gaithersburg — We present results of first-principles calculations of the frequency-dependent polarizabilities of all alkali atoms for light in the wavelength range 300-1600 nm, with particular attention to wavelengths of common infrared lasers. We parameterize our results so that they can be extended accurately to arbitrary wavelengths above 800 nm. This work is motivated by recent experiments involving simultaneous optical trapping of two different alkali species. Our data can be used to predict the oscillation frequencies of optically-trapped atoms, and particularly the ratios of frequencies of different species held in the same trap. We identify wavelengths at which two different alkali atoms have the same oscillation frequency.

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