THE HYPERFINE INTERACTIONS IN RbF, RbCl, RbOH, AND KBr

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Molecular beam investigations of several heavier alkali halide and hydroxide molecules are underway, providing new, and much more precise, values for all the hyperfine interactions. Looking at the different rubidium molecules makes it possible to check for systematic trends. The ratios of the nuclear electric quadrupole moments of the two Rb isotopes are found to be consistent, provided that an allowance is made for a small isotopomer shift as noted recently for LiI [a], with a value $Q(^{87}\mathrm{Rb})/Q(^{85}\mathrm{Rb}) = 0.4838301 \pm 0.0000020$.

[a] J. Cederberg, J. Nichol, E. Frodermann, H. Tollerud, G. Hilk, J. Buysman, W. Kleiber, M. Bongard, J. Ward, K. Huber, T. Khanna, J. Randoph and D. Nitz, J. Chem. Phys. 123, 134321 (2005).