THE HYPERFINE SPECTRUM OF RbCl

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A molecular beam electric resonance spectrometer has been used to observe pure hyperfine transistions of all four isotopic forms of rubidium chloride, with a linewidth of about 150 Hz. So far 179 observed lines have been identified as belonging to $^{85}$Rb$^{35}$Cl, and tentatively fitted to determine the hyperfine constants, including nuclear quadrupole and spin-rotation interactions for both nuclei, and the tensor and scalar spin-spin interactions, for vibrational states $v = 0 - 3$ and rotational states $J = 1 - 6$. An additional 103 lines have been identified and fitted for $^{87}$Rb$^{35}$Cl. The possibilities of a rubidium nuclear octupole interaction, and (in the case of $^{85}$Rb) a nuclear electric hexadecapole interaction, are also being considered.