HIGH RESOLUTION INFRARED SPECTROSCOPY OF THE ν_5 AND ν_7 BANDS OF HEXAFLUOROETHANE

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The ν_5 and ν_7 fundamental bands of hexafluoroethane were observed using two molecular beam techniques: pulsed slit-jet, diode laser spectroscopy, and continuous slit-jet, Fourier transform spectroscopy. The estimated rotational temperature of both beams is on the order of 10 K. Preliminary analysis of the ν_5 parallel band shows a regular progression of strong $K = 0$ transitions in the P, Q, and R-branches; other sub-bands are heavily perturbed. The band origin is at 1117.1098(5) cm^{-1}, $B'' = 0.06140(9)$ cm^{-1}, and $B' = 0.061641$ cm^{-1} for the prolate symmetric top molecule. The ν_7 perpendicular band is centered at 1253 cm^{-1} and shows a congested series of ${}^RQ$ and ${}^PQ$ sub-branches. Spectra from both spectrometers and a detailed ro-vibrational analysis will be presented for both bands.