HIGH-RESOLUTION STUDY OF THE FIRST STRETCHING OVERTONES OF $H_3Si^{79}Br$.

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The Fourier transform infrared spectrum of monoisotopic $H_3Si^{79}Br$ was studied from 4200 to 4500 cm^{-1}, in the region of the first overtones of the Si-H stretching vibration. The spectrum revealed the presence of two band systems, a strong one (the (200) manifold in the local mode picture) and a weak one (the (110) manifold). Each system consists of one parallel and one perpendicular component, with the following band centers: 4340.2002 cm^{-1}, 4342.1432 cm^{-1}, 4405.789 cm^{-1} and 4416.233 cm^{-1} for (200, A_1), (200, E), (110, A_1) and (110, E) respectively. The rovibrational analysis shows strong local perturbations for both band systems, and the levels responsible for these perturbations are often difficult to identify. Excluding the more severely perturbed levels, it was possible to fit about 800 transitions of the strong system to a simple model involving a x, y Coriolis interaction between a parallel and a perpendicular band. The s.d. of the residuals are 1.0×10^{-3} cm^{-1} and 0.77×10^{-3} cm^{-1} for (200, A_1) and (200, E) respectively. A similar model was used for the (110) system but with less success, due to the small number of unperturbed subbands. In particular, the K".ΔK = +10 to +18 subbands had to be excluded from the fit.