Intracavity laser absorption spectroscopy of CHD_3 from 10000 to 18000 cm^{-1}

D. PERMOGOROV and A. CAMPARGUE

Laboratoire de Spectrométrie Physique, associé au CNRS, BP. 87, Université Joseph Fourier, 38402 Saint Martin d'Hères cedex, France

The high resolution absorption spectroscopy of the CHD_3 molecule has been completed by a systematic study between 10000 and 18000 cm^{-1} . Due to the very low intensity of the overtone bands in this range of energy, the spectra were obtained using the Intracavity Laser Absorption Spectroscopy (ICLAS) technique. For this purpose, the cell containing CHD_3 was inserted in a dye laser for the study between 12000 and 18000 cm^{-1} or a Ti:Sapphire laser for the study between 10000 and 12000 cm^{-1} .

The vibrational analysis of the 20 bands observed in this range has been performed by taking into account of the strong tridiagonal Fermi resonance between the $\nu_1(\text{A}_1)$ CH stretching and the $\nu_5(\text{E})$ bending mode. The CH stretching motion is also coupled with the CD stretching and the corresponding bands are well accounted by the standard local mode model. Two other bands at 12235 cm^{-1} and 14753 cm^{-1} has been assigned to combination bands involving the $\nu_3(\text{A}_1)$ mode.