THE 0.793 µM REGION OF THE AMMONIA SPECTRUM

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Three unapodized absorption spectra of ammonia have been recorded in the range 11000 – 14500 cm\(^{-1}\) at room temperature, pressures of 22, 35 and 64 hPa and a resolution of 0.04 cm\(^{-1}\) (MOPD = 22 cm) using a Bruker IFS 125 HR Fourier transform spectrometer and a White-type pyrex multipass cell set to provide an absorption path length of 34.50 (10) meters. The positions, intensities and self broadening coefficients of ammonia lines observed in the range 12490 – 12810 cm\(^{-1}\) have been measured using a multi-spectrum fitting program developed in Brussels. The ammonia line positions were calibrated using water vapor lines observed in the ranges 11960 – 12296 cm\(^{-1}\) and 13662 – 13938 cm\(^{-1}\) in low pressure spectra recorded at the same conditions as the ammonia spectra and reference information available in HITRAN.\(^1\)

The spectrum was analyzed in the region 12000 – 13000 cm\(^{-1}\) using ammonia empirical line list.\(^2\) The line list was obtained by optimization of \textit{ab initio} potential energy surface.\(^3\) The analysis with the help of ground state combination differences had been done for vibrational states with \(4\nu_{NH}\) stretching excitation \((\nu_1 + \nu_3 = 4)\).

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