

POSITIONS AND INTENSITIES IN THE VIBRATIONAL SYSTEM $3\nu_2/\nu_2+\nu_4$ OF $^{14}\text{NH}_3$ NEAR $4\ \mu\text{m}$.

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We report experimental line positions and intensities of the $3\nu_2$ and $\nu_2 + \nu_4$ bands of $^{14}\text{NH}_3$ obtained from $0.011\ \text{cm}^{-1}$ apodized resolution spectra recorded with the Fourier transform spectrometer at Kitt Peak National Observatory.

1366 lines with $J' \leq 13$ have been assigned from which 1213 line positions with ($J' \leq 12$) are fitted using an effective rotation-inversion Hamiltonian to achieve a rms of $0.0069\ \text{cm}^{-1}$. 726 intensity measurements are model led to 12 terms of dipole moment expansion to $\pm 6\%$. The band strengths of $3\nu_2$ (s-a) at $2384.15\ \text{cm}^{-1}$, of $3\nu_2$ (a-s) at $2895.52\ \text{cm}^{-1}$, of $\nu_2 + \nu_4$ (s-s) at $2540.53\ \text{cm}^{-1}$, and of $\nu_2 + \nu_4$ (a-a) at $2586.13\ \text{cm}^{-1}$ are $0.61(3)$, $0.244(7)$, $0.186(3)$ and $0.174(25)\ \text{cm}^{-2}\ \text{atm}^{-1}$ respectively.

A prediction of the line parameters has been generated for all lines with intensities greater than $0.11\ \text{cm}^{-2}\ \text{atm}^{-1}$ at 296K and submitted to HITRAN data base.

Beside the lines belonging to the $3\nu_2/\nu_2 + \nu_4$ system a number of strong features appear in the spectra which could be assigned by a preliminary study to the hot bands $(\nu_3 - \nu_2)$, $(\nu_1 - \nu_2)$, $(4\nu_2 - \nu_2)$.

Implications about the suitability of the Hamiltonian used is explored, given that the experimental accuracy is a factor of about 10 times better that has been achieved by the fit.

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