ANALYSIS OF THE FIRST AND SECOND TRIADS OF H₂S FROM 2200 TO 4100 cm⁻¹

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The 1800-5400 cm⁻¹ region of H₂S was recorded at 0.011 cm⁻¹ resolution using the McMath Fourier transform spectrometer located at Kitt Peak National Observatory. The positions of the first triad \(2ν₂, ν₁, \) and \(ν₃\), near 4 μm and the second triad \(3ν₂, ν₁+ν₂, \) and \(ν₂+ν₃\), near 2.7 μm were obtained for H₂³²S, H₂³⁴S and H₂³³S. The experimental upper states were fitted to the A-reduced Watson Hamiltonian to determine precise sets of rotational constants and Fermi and Coriolis coupling parameters. Line intensities of H₂³²S up to \(J = 17\) and \(K_a = 12\) were measured and modelled to ±2.5% using the 564 intensities of the first triad and 526 intensities of the second triad. The coefficients of the transformed moment expansion were obtained, corresponding to band strengths in cm⁻²/atm at 296 K of 0.33 for \(2ν₂\), 0.45 for \(ν₁\) and 0.12 for \(ν₃\), 0.03 for \(3ν₂\), 1.82 for \(ν₁+ν₃\) and 2.87 for \(ν₂+ν₃\).

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