

THE ROTATIONAL SPECTRUM OF H₂S: THE H₂³³S ISOTOPOLOGUE AND THE SUB-DOPPLER RESOLUTION IN THE THz REGIME

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Measurements of the rotational spectrum of H₂³³S, detected in natural abundance, were performed in the 200 GHz - 1.072 THz frequency range. The Lamb-dip technique was employed to exploit sub-doppler resolution and thus to resolve the hyperfine structure of the rotational lines. The retrieved transition frequency values allowed us to revise the ³³S spin-rotation tensor as well as to improve the ³³S quadrupole-coupling and centrifugal-distortion constants.

Furthermore, the rotational spectrum of the main isotopologue was investigated in the THz frequency regime. The Lamb-dip technique was employed as well in order to obtain sub-doppler resolution in this frequency region and thus to provide transition frequency values at 1 THz with an accuracy of 1 kHz.