THE ROTATIONAL SPECTRUM OF H_2S: THE $H_2{}^{33}S$ ISOTOPOLOGUE AND THE SUB-DOPPLER RESOLUTION IN THE THz REGIME

GABRIELE CAZZOLI, CRISTINA PUZZARINI, *Dipartimento di Chimica "G. Ciamician", Università di Bologna, I-40126 Bologna, Italy*.

Measurements of the rotational spectrum of $H_2{}^{33}S$, 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 ^{33}S spin-rotation tensor as well as to improve the ^{33}S quadrupole-coupling and centrifugal-distortion constants.
Furthermore, the rotational spectrum of the main isotopopologue 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.