ANALYSIS OF THE $FASSST$ ROTATIONAL SPECTRUM OF $S(CN)_2$

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We report a detailed analysis of the FASSST rotational spectrum of the $S(CN)_2$ molecule, which has been recorded almost continuously from 110 to 375 GHz. $S(CN)_2$ is of $C_{2v}$ symmetry, is characterised by a low frequency bending mode of 120-130 $cm^{-1}$, and has four other normal modes with frequencies of less than 500 $cm^{-1}$. Only cm-wave transitions in the ground state of several isotopomers,[a,b,c] and some transitions in the first excited bending state[a] have previously been observed.

Rotational transitions in first excited states of all five lowest frequency normal have now been assigned, as well as in the bending progression up to $v = 5$, and in some combination states. The use of the efficient, newly written $AABS$ package for Analysis and Assignment of Broadband Spectra allowed several thousand lines to be added also to the datasets for the ground states of the parent, and the $^{34}S$ isotopomers. The total number of lines measured in the FASSST spectrum of $S(CN)_2$ is well over 10000. Octic level spectroscopic constants have been derived for the studied states, and their vibrational dependence will be discussed. Vibrational assignment was confirmed by means of $ab\ initio$ inertial defect calculations.

[a] W.Arnold, H.Dreizler, H.D.Rudolph, *Z. Naturforsch.* **19a**, 1428 (1964)
[b] L.Pierce, R.Nelson, R.Thomas, *J. Chem. Phys.* **43**, 3423 (1965)
[c] H.M.Jemson, M.C.L.Gerry, *J. Mol. Spectrosc.* **124**, 481 (1987)