THE GROUND STATE ROTATIONAL SPECTRUM OF SO_2F_2.

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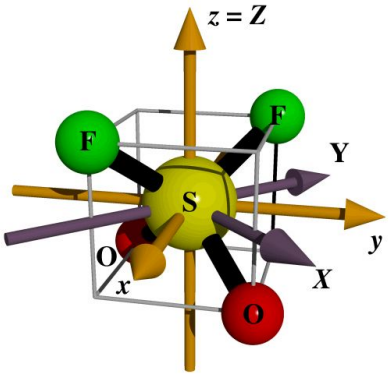
The analysis of the ground state rotational spectrum of SO_2F_2[a] has been performed with the Watson's Hamiltonian up to sextic terms but shows some limits due to the A and S reductions. Since SO_2F_2 is a quasi-spherical top, it can also be regarded as derived from an hypothetical XY_4 molecule. Thus we have developped a new tensorial formalism in the $\mathbf{O(3)} \supset \mathbf{T_d} \supset \mathbf{C_{2v}}$ group chain[b]. We test it on the ground state of this molecule using the same experimental data[c] (0–1 THz region, J up to 99). Both fits are comparable even if the formalisms are slightly different. This talk intends to establish a link between the classical approach and the tensorial formalism. In particular, our tensorial parameters at a given order of the development are related to the usual ones. Programs for spectrum simulation and fit using these methods are named C_{2v}TDS. They are freely available at the URL:

`http://www.u-bourgogne.fr/LPUB/c2vTDS.html`



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[b] M. Rotger, V. Boudon and M. Loëte, *J. Mol. Spectrosc.*, **216**, 297-307, (2002).

[c] M. Rotger, V. Boudon, M. Loëte, L. Margulès, J. Demaison, H. Mäder, G. Winnewisser and H.S.P. Müller, *J. Mol. Spectrosc.*, in preparation, (2003).