BREAKDOWN OF THE REDUCTION OF THE ROVIBRATIONAL HAMILTONIAN : THE CASE OF $S^{18}O_2F_2$

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The ground state rotational spectrum of the near-spherical top molecule $S^{18}O_2F_2$ (sulfuryl fluoride) has been measured from 50 to 700 GHz. As for the parent isotopologue, $S^{16}O_2F_2$[a], it was necessary to use a non-reduced Hamiltonian in order to obtain a satisfactory fit. It was possible to determine six quartic centrifugal distortion constants (instead of five for a standard asymmetric top) and an additional sextic constant could also be determined. This ground state level has also been analysed thanks to a tensorial formalism developed in Dijon. Only two tensorial sextic constants are fixed to zero, all others have been adjusted. Although $S^{18}O_2F_2$ is less spherical than $S^{16}O_2F_2$, the analysis was more difficult. It is partly due to the fact that $S^{18}O_2F_2$ is oblate whereas $S^{16}O_2F_2$ is prolate. The experimental quartic centrifugal distortion constants were found in good agreement with those calculated from the force field, confirming the correctness of the analysis.

[a] K. Sarka, J. Demaison, L. Margulès, I. Merke, N. Heineking, H. Bürger, and H. Ruland, *J. Mol. Spectrosc.*, **200**, 55 (2000)