AN UNUSUAL INTERNAL ROTATION: THE THREE-MINIMA MOTION OF AR IN TRIFLUOROMETHANE-AR

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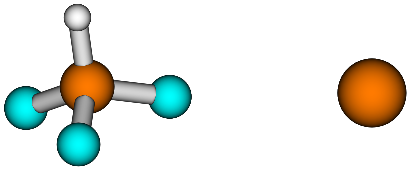
The rotational spectrum of Trifluoromethane-Ar (CHF_3-Ar, see Fig. on the right) has been observed by free jet absorption millimeter wave spectroscopy. The near prolate top spectrum of the adduct suggests that: i) the location of Ar is out of the C_{3v} axis of CHF_3; ii) the barrier to internal rotation of Ar is not negligible. The rotational lines are split in equally intense A E component lines for the low K_{-1} transitions, and in triplets lines for the high K_{-1}, transitions (doubly overlapped because of the near prolate degeneracy) with intensities 2:1:1 for A:E^+:E^- components. Such a behaviour is in accord with Hersbach theory for internal rotation.[a]



[a] D. R. Herschbach and J. D. Swalen *J. Chem. Phys.* **29**, 761 (1958).