ANALYSIS OF HIGH-RESOLUTION SPECTRA OF CYCLOPROPANE

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Cyclopropane is the simplest of the strained carbon compounds that form rings or cages. Though the lowest vibrational state lies at 739 cm^{-1}, half of the infrared active fundamental vibrations are perturbed by some form of a combination and/or overtone vibration. Previous work was restricted in that the majority of the lower vibrational states are either dark or infrared inactive. This forced investigators into giving their best estimates of the rotational constants of perturbing states and in some cases their best estimates as to the identification of the perturbing states. This has prompted a reinvestigation of cyclopropane using high-resolution infrared spectroscopy. A Coriolis interaction that couples ν_7 to ν_{11} was identified and an improved set of rovibrational constants will be given. In addition, a high-resolution CARS spectrum of the ν_2 Raman band that is involved in a Fermi resonance triad with $2\nu_{14}$ and ν_9 provides an additional check to the validity of the assignments.