

EXTENSION OF TIME-RESOLVED DOUBLE RESONANCE STUDIES OF ROTATIONAL ENERGY TRANSFER TO AN OBLATE SYMMETRIC ROTOR

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Time-resolved double resonance spectroscopy is a powerful technique for studying intramolecular energy transfer mechanisms. Previous studies of rotational energy transfer in the prolate symmetric tops CH_3F and CH_3Cl have culminated in a quantitative and predictive model for rovibrational relaxation in these molecules which reduces the inherent complexity of the problem to only a small number of adjustable parameters. In the oblate symmetric top CDF_3 , the spacing between K levels is much closer than the spacing between J levels, while for CH_3F and CH_3Cl the opposite is true. The goal of the current study is to understand exactly what effect this has on the relative importance of the pathways for rovibrational relaxation in CDF_3 , because it can provide a stringent test both of the existing model and of our current state of understanding of energy transfer mechanisms in polyatomic molecules. Recent experimental results will be presented.