FIRST HIGH RESOLUTION IR SPECTRA OF 2,2-D$_2$-PROPANE. THE $\nu_{15}$ ($B_1$) A-TYPE BAND NEAR 954.709 cm$^{-1}$.

DETERMINATION OF GROUND AND UPPER STATE CONSTANTS.

**DANIEL GJURAJ**, Department of Physics, Iona College, New Rochelle, NY, USA; S.J. DAUNT, ROBERT GRZYWACZ, Department of Physics & Astronomy, The University of Tennessee-Knoxville, Knoxville, TN, USA; WALTER LAFFERTY, Optical Technology Division, National Institute of Standards and Technology, Gaithersburg, MD, USA; JEAN-MARIE FLAUD, CNRS, Universités Paris Est Créteil et Paris Diderot, LISA, Créteil, France; BRANT E. BILLINGHURST, EFD, Canadian Light Source Inc., Saskatoon, Saskatchewan, Canada.

As part of our project on the study of isotopologues of propane we have taken the spectra of the 2-D and 2,2-D$_2$ substituted species. There have been no studies of these species since the early IR studies.$^a$$^b$$^c$$^d$

We recorded high resolution ($\Delta \nu = 0.0009$ cm$^{-1}$) FTS data on the Canadian Light Source Far-IR beamline. The spectra of all bands of both species in the region examined (500 - 1250 cm$^{-1}$) show torsionally perturbed lines, all but one band appearing globally perturbed. Virtually all bands were not amenable to analysis at present except for the $\nu_{15}$ ($B_1$) A-type band centered at 954.709 cm$^{-1}$. One can still see a few perturbed lines with torsional components but overall most lines were single and could be readily assigned using traditional methods. The spectrum is modelled well using PGOPHER.$^e$ No MW determined GS constants were available so we have analyzed about 3500 levels to determine both ground state and upper state rotational constants.

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