FOURIER TRANSFORM MICROWAVE SPECTROSCOPY OF ACETYLENE-1,1-DIFLUOROETHYLENE

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The rotational spectra of four isotopomers of HCCH-CH_2CF_2 (the most abundant isotopomer, HCCD-CH_2CF_2, DCCD-CH_2CF_2, and $H^{13}C^{13}CH$-CH_2CF_2) have been collected in the 6-18 GHz region with a pulsed molecular beam, Fourier transform microwave spectrometer. The nuclear quadrupole hyperfine structure due to the deuterium nuclei in two of the isotopomers is observed. The spectroscopic constants are consistent with a planar structure in which the primary interaction is between H in HCCH and one of the F atoms in 1,1-difluoroethylene. There is also a secondary interaction between the acetylenic bond and the H atom *cis* to the F atom involved in the hydrogen bond with HCCH.