MICROWAVE SPECTRA OF ^{18}O-TROPOLONE AND D-TROPOLONE

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Tropolone is a seven-membered ring with an intramolecular hydrogen bond between the hydroxyl proton on C_1 and the carbonyl oxygen on C_2. The proton tunnels between the two neighboring oxygen atoms. Microwave spectra of singly-substituted ^{18}O-tropolone and of singly-deuterated tropolone were measured to determine the effect of these two substitutions on the proton tunneling dynamics. The 0^+ state of ^{18}O-tropolone and both the 0^+ and 0^- states of D-tropolone were observed and assigned. Analysis of the spectra reveals complete quenching of the tunneling splitting of ^{18}O-tropolone. The energy separation between the 0^+ and 0^- states in D-tropolone was determined and is found to be significantly smaller than that of normal tropolone.