MICROWAVE SPECTRA FOR THE THREE $^{13}$C$_1$ ISOTOPOLOGUES OF PROPENE AND NEW ROTATIONAL CONSTANTS FOR PROPENE AND ITS $^{13}$C$_1$ ISOTOPOLOGUES

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New measurements of microwave lines (A and E) of propene and its three $^{13}$C$_1$ isotopologues have been made in the 10-22 GHz region with FT accuracy. The revised lines for propene along with many hundreds from the literature were fitted with the ERHAM program for internal rotors to give improved rotational constants. The new constants for propene are $A_0 = 46280.2904(16)$, $B_0 = 9305.24260(30)$, and $C_0 = 8134.22685(28)$ MHz. Lines for the 3-$^{13}$C$_1$ species were observed in a pure sample; lines for the 1-$^{13}$C$_1$ and 2-$^{13}$C$_1$ species were observed in natural abundance. In fitting the limited sets of lines for the $^{13}$C$_1$ species, many of the centrifugal distortion constants and most of the tunneling parameters were transferred from the fit of propene itself with 27 parameters. Improved rotational constants for the $^{13}$C$_1$ species are reported.