THE LAMBDA-TYPE DOUBLING TRANSITIONS OF THE CH RADICAL AND ITS ISOTOPIC SPECIES

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The lowest lambda-type doubling transitions of the CH radical and its carbon-13 isotopic species have been directly detected at centimeter wavelengths for the first time. Using a Fourier transform microwave spectrometer and a pulsed supersonic molecular beam, the hyperfine-split components in the $X^2\Pi_{1/2}$ state have been measured to high precision (1 kHz) between 3 and 15 GHz. Owing to the high spectral resolution of this technique, the accuracies of the hydrogen and carbon-13 coupling constants have been significantly improved. A full account of our measurements, including a comparison of the production of CH with different precursor gases and attempts to measure the analogous transitions of the deuterated isotopic species (CD), will be presented.