

DIMETHYL ETHER BETWEEN 214.6 AND 265.3 GHZ: THE COMPLETE, TEMPERATURE RESOLVED SPECTRUM

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We have studied dimethyl ether, one of the so-called ‘astronomical weeds’, in the 214.6–265.3 GHz band. We have experimentally gathered a set of intensity calibrated, complete, and temperature resolved spectra from across the temperature range of 238–391 K. Using our previously reported method of analysis^a, the point by point method, we are capable of generating the complete spectrum at astronomically significant temperatures. Many lines, of nontrivial intensity, which were previously not included in the available astrophysical catalogs have been found. Lower state energies and line strengths have been found for a number of lines which are not currently present in the catalogs. The extent to which this may be useful in making assignments will be discussed.

^aJ. McMillan, S. Fortman, C. Neese, F. DeLucia, ApJ. 795, 56 (2014)