NITROGEN-BROADENED $^{13}CH_4$ AT 80 TO 296 K

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High-resolution spectra of the ν_4 fundamental band of $^{13}CH_4$ broadened by N_2 at temperatures relevant to the atmosphere of Titan were recorded using temperature-controlled absorption cells[a] installed in the sample compartment of a Bruker IFS-125HR Fourier Transform spectrometer (FTS) at the Jet Propulsion Laboratory (JPL). Analysis of these spectra using multispectrum fitting[b] has determined half widths, pressure-induced shifts, line mixing parameters and their temperature dependences for transitions belonging to a number of P- and R-branch J-manifolds. The analysis examined in detail the temperature-dependence of N_2-broadened half width and pressure-induced shift coefficients over the entire temperature range from 80 K to 296 K. The results are compared with other published measurements of N_2- and air-broadened methane parameters.[c]

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[a] K. Sung, A. W. Mantz, M. A. H. Smith, L. R. Brown, T. J. Crawford, V. Malathy Devi and D. C. Benner, *JMS* **262** (2010) 122-134.

[b] D. C. Benner, C. P. Rinsland, V. Malathy Devi, M. A. H. Smith and D. A. Atkins, *JQSRT* **53** (1995) 705-721.

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