MODELING N_2 AND H_2 BROADENED CH_4 INFRARED ABSORPTION SPECTRA. LINE-MIXING MODEL AND COMPARISONS WITH MEASUREMENTS

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Line-mixing effetcs have been studied in ν_3 and ν_4 bands of CH_4 perturbed by N_2 and H_2 at various temperatures. The absorption in the 1100-1500 and 2800-3200 cm^{-1} spectral regions for total pressures in the 0.25-2 and 25-500 atm ranges have been measured. A line-mixing model is proposed wich is based on state-to-state collisional transfert rates calculated from intermolecular potential surface with a semiclassical approach. The line-coupling relaxation matrix is constructed from these state-to-state collisional transfert rates and some empirical parameters. The results of comparisons between measurements and spectra computed accounting for and neglecting line-mixing prove the satisfactory quality of the model. Calculations with the line-mixing model of atmospheric spectra are also made.