MODEL FOR LINE-MIXING EFFECTS IN THE INFRARED ν_3 BAND OF CH_4. APPLICATION TO ATMOSPHERIC SPECTRA

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Recent studies, using laboratory and atmospheric spectra, have demonstrated the influence of line-mixing effects on CH_4 infrared absorption. This phenomenon can significantly affect remote sensing results for atmospheric applications and the contribution of CH_4 to the green house effect. We propose a model of the relaxation operator in order to account for these effects in the computations of the absorption. The model was built using a semi-classical calculation of collisional energy transfer rates[a] and few empirical parameters. Results obtained for N_2-broadened spectra of the ν_3 band of CH_4 (near 3 μm) including laboratory measurements covering different pressure and temperature ranges, and atmospheric spectra will be presented.

[a] T. Gabard, *J. Quant. Spectrosc. Radiat. Transfer* Vol. 57, no. 2, pp. 177-196, 1997.