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## EXPERIMENTAL STUDY OF TEMPERATURE-DEPENDENCE LAWS OF NON-VOIGT ABSORPTION LINE SHAPE PARAMETERS

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To improve the understanding of temperature-dependence laws of spectral line shape parameters, spectra of the  $\nu_3$  rovibrational band of CO<sub>2</sub> perturbed by 10, 30, 100, 300 and 1000 mbar of N<sub>2</sub> were measured at nine temperatures between 190 K and 330 K using a 22 cm long single-pass absorption cell in a Bruker IFS125 HR Fourier Transform spectrometer. The spectra were fitted employing a quadratic speed-dependent hard collision model in the Hartmann-Tran implementation<sup>bc</sup> extended to account for line mixing in the Rosenkranz approximation by means of a multispectrum fitting approach developed at DLR<sup>d</sup>. This enables high accuracy parameter retrievals to reproduce the spectra down to noise level and we will present the behavior of line widths, shifts, speed-dependence-, collisional narrowing- and line mixing-parameters over this 140 K temperature range.

**NOTE:** The horizontal line across the page indicates the maximum allowed length of the abstract including footnotes. If your abstract is close to or exceeds the length limit, it may appear on page 2 of this document.

Time required: 15 min Session Categories (Keywords) by Relevance: Lineshapes, collisional effects — Fundamental interest — Linelists — Remote sensing — Infrared/Raman — Small molecules Mini-Symposia Requested: None — None Competing for Rao Prize? No Competing for Miller Prize? No

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<sup>&</sup>lt;sup>b</sup>Ngo et al. JQSRT 29, 89-100 (2013); JQSRT 134, 105 (2014).

<sup>&</sup>lt;sup>c</sup>Tran et al. JQSRT **129**, 199-203 (2013); JQSRT **134**, 104 (2014).

<sup>&</sup>lt;sup>d</sup>Loos et al., 2014; http://doi.org/10.5281/zenodo.11156.