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Accession number:WOS:000305355200020

Title:N-2-, O-2-, H-2-, and He-broadening of SO<sub>2</sub> rotational lines in the mm-/submm-wave and THz frequency regions: The J and K-a dependence

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Source title:JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER

Abbreviated source title:J QUANT SPECTROSC RA

Volume:113

Issue:11

Issue date:JUL 2012

Pages:1051-1057

Language:English

ISSN:0022-4073

Document type:Article

Publisher:PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND

Abstract:The collisional broadening of several rotational lines of SO<sub>2</sub> perturbed by N-2, O-2, H-2 and He has been investigated in a frequency range spanning from the millimeter-wave up to similar to 0.3 mm, at room temperature. In view of drawing conclusions over the J- and K-a-dependence trends of the pressure-broadening coefficients, for all perturbers, Q-type ( $\Delta J = 0$ ) transitions with  $11 \leq J \leq 60$  (with  $K-a = 10$ ) and  $0 \leq K-a \leq 6$  (with  $J = 10$ ) have been considered. While for all perturbers the observed trend suggests a weak maximum for J similar to 20, for the K-a dependence different trends are noted. For O-2, H-2, and He a small increase is noted by enlarging the K-a value, whereas a small decrease is observed for N-2. (C) 2012 Elsevier Ltd. All rights reserved.

Number of references:33

Main heading:Spectroscopy

DOI:10.1016/j.jqsrt.2012.01.011