ABSOLUTE LINE INTENSITIES OF HONO AND DONO IN THE FAR INFRARED AND REDETERMINATION OF THE ENERGY DIFFERENCE BETWEEN THE TRANS AND CIS SPECIES OF NITROUS ACID

V. SIRONNEAU, J.-M. FLAUD, I. KLEINER, P. CHELIN, *Laboratoire Interuniversitaire des Systèmes Atmosphériques, CNRS et Universités Paris 7 et Paris 12, 61 av. Général de Gaulle, 94010, Créteil, France*; J. ORPHAL, *Institute for Meteorology and Climate Research, Karlsruhe Institute of Technology, 76344 Eggenstein-Leopoldshafen, Germany.*

Nitrous acid is an important species in the atmosphere of the Earth since it is a significant daytime source of OH radicals, known to play an important role in tropospheric ozone formation. It is also a molecule of interest for molecular dynamics and *ab-initio* calculations. In this work, relative line intensities of *trans*- and *cis*-HONO and DONO have been measured using absorption spectra in the far-infrared previously recorded by high-resolution Fourier-transform spectroscopy [a]. These relative line intensities measurements were fitted in a least-squared procedure leading to the determination of the b-component of the permanent dipole moments for those species and their rotational corrections. Scaling those values to the absolute values derived from Stark effect measurements [b] allowed us to re-determine the energy difference between the two isomers (ΔE_{HONO}) to be 107±26 cm^{-1}. This value is in good agreement with previous experimental studies calculations and with recent high-level *ab-initio* calculations.

[a] A. Dehayem-Kamadjeu, O. Pirali, J. Orphal, I. Kleiner, P.-M. Flaud, J. Mol. Spectrosc. 234, 182-189 (2005)

[b] M. Allegrini, J.W.C. Johns, A.R.W. McKellar, P. Pinson, J. Mol. Spectrosc. 79, 446-454 (1980)