MEASURED AND CALCULATED ABSORPTION-LINE SHAPE PARAMETERS OF THE H_2O–CO_2 SYSTEM IN THE 8600-9000 CM^{-1} SPECTRAL REGION

Petrova T.M., Solodov A.M., Solodov A.A., Deichuli V.M., Dudaryonok A.S., Lavrentieva N.N.

V.E. Zuev Institute of Atmospheric Optics SB RAS, Tomsk, Russia

e-mail: dudaryon@iao.ru, lnn@iao.ru, tanja@iao.ru

The CO_2-broadening and shift coefficients of H_2O lines are necessary to study the planets atmospheres with the carbon dioxide as the main gas. Water-vapor absorption lines broadened by the carbon-dioxide pressure were recorded using the IFS 125 HR Fourier spectrometer in the range of 8600–9000 cm^{-1}. It was applied the quadratic Voigt profile which takes into account the dependence of the broadening and shift on the colliding molecules velocities. Calculations were performed using a semi-empirical method, the rotational quantum numbers J vary from 0 to 20.

The work was financially supported by the Russian Science Foundation (grant 24-22-00170).