LONG PATH- HIGH RESOLUTION SPECTRUM OF METHANE. TOWARDS TITAN'S ATMOSPHERE

LUDOVIC DAUMONT, VLADIMIR TYUTEREV, LAURENCE REGALIA, XAVIER THOMAS, PIERRE VON DER HEYDEN, *Groupe de Spectrométrie Moléculaire et Atmosphérique,UMR CNRS 6089, Université de Reims Champagne-Ardenne, U.F.R. Sciences, B.P. 1039, 51687 Reims Cedex 2, France*; ANDREI NIKITIN, *Laboratory of Theoretical Spectroscopy, Institute of Atmospheric Optics, Russian Academy of Sciences, 1, Akademichesky Avenue, 634055 Tomsk, Russian Federation*; LINDA BROWN, *Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109, USA*.

The precise knowledge of the methane absorption in the study of planetary systems, and especially of Titan (Saturn's largest satellite whose atmosphere is mainly composed of nitrogen and methane at temperatures ranging between 70 K and 200 K), is of great importance because it gives access to the determination of the physical properties of these objects. The full interpretation of the Titan data returned by the ground-based and space observations has been hindered by the lack of precise knowledge of the methane absorption which dominates Titan's near infrared spectra.

We investigate the methane spectra in the closest conditions to existing Titan's spectra. We used the 50 m long cell from Reims university in front of the Home-made Fourier Transform Spectrometer to study the $^{12}CH_4$ spectra with 1603 m absorption path length, 1, 7 and 34 hPa pressures and at room temperature. The spectra was recorded in the all range from 3800 to 8100 cm^{-1}. The up-to-date measurements and assignments- mainly in the so called methane transparancy windows- will be presented and discussed.