FOURIER TRANSFORM $^{12}CH_3D$ SPECTRA IN THE REGION $3800 - 8000$ cm^{-1}. DIRECT COMPARISON TO AB INITIO CALCULATION.

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The spectra of $^{12}CH_3D$ isotopologue has been recorded in the all region 3800 - 8000 cm^{-1} using the Step-by-Step Fourier Transform spectrometer of G.S.M.A. at Reims university. The region was studied using four optical filters with maximum optical path differences of 0.7 and 1 meter. The Fourier Transform Spectrometer was fitted with a tungsten light source. The light power was limited at the entrance of the spectrometer using a 5 mm-diameter iris. The detection was performed using a pair of InSb detectors.[1] The $^{12}CH_3D$ gaz has been purchased at EURISO-TOP with an isotopic purity of 98 %. It was used to fill our 2 meter base long White-type cell built in the frame of a previous french ANR support for methane studies. Two absorption paths of 8 and 40 meters were used with the same amount of gaz corresponding to a pressure of 1.7 torr.

The spectra obtained show an important number of structures belonging to several polyads of $^{12}CH_3D$ and the determination of lines parameters will be made further. This poster presents the first comparison to the *ab initio* calculations of Rey et *al.*[2] The theoretical calculations of the involved teams already brought decisive information for the analysis of the main isotopologue[3] spectra and will now serve the analysis of $^{12}CH_3D$.

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[2] M. Rey, A. V. Nikitin and Vl. G. Tyuterev: Accurate first-principles calculations for $^{12}CH_3D$ infrared spectra from isotopic and symmetry transformations. *J. C. P.* **141**, 044316 (2014).

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