FIRST ANALYSIS OF THE $0 - \nu''$ PROGRESSION OF THE COMET-TAIL SYSTEM $A^2\Pi_i - X^2\Sigma^+$ IN THE $^{12}C^{17}O^+$ CATION.

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The $0 - \nu''$ progression of the Comet-Tail $A^2\Pi_i - X^2\Sigma^+$ system, where $\nu'' = (0, 1, 2, 3)$, was recorded for the first time in the $^{12}C^{17}O^+$ isotopologue. Using a high-resolution Fourier-transform spectrometer, more than 1500 emission lines were measured in the region of 12,880 - 20,500 cm^{-1}.

A deperturbation analysis was performed using the PGOPHER program.[1] As a result, deperturbed molecular parameters of the $A^2\Pi_i(v = 0)$ and $X(v = 0,1,2,3)$ levels and the $A^2\Pi_i(v = 0) \sim X^2\Sigma^+(v = 10)$ perturbation parameter of a complex (spin-orbit, spin-electronic and rotation-electronic) character were determined.

The values of the ro-vibronic terms of the $A^2\Pi_i(v = 0)$ level were also calculated and the percentage $^2\Pi$ character of the $A^2\Pi_i(v = 0)$ and $X^2\Sigma^+(v = 10)$ levels was examined. This work is a continuation of the studies on the $A^2\Pi_i$ state in the $^{12}C^{17}O^+$ isotopologue made by our team.[2]

[1] doi:10.1016/j.jqsrt.2016.04.010, C. M. Western, PGOPHER: a program for simulating rotational, vibrational and electronic spectra, *Journal of Quantitative Spectroscopy and Radiative Transfer*, **186**, 221-242, (2017).

[2] doi:10.1016/j.jqsrt.2022.108268, I. Piotrowska, R. Hakalla, W. Szajna, R. Kępa, First observation of the Comet-Tail $A^2\Pi_i - X^2\Sigma^+$ system in the $^{12}C^{17}O^+$ cation, *Journal of Quantitative Spectroscopy and Radiative Transfer*, **289**, 108268, (2022).