Comparison of the spectral peculiarities of the selected Jupiter-family and Oort Cloud comets and comets of the Oort cloud

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The results of the observations and study of the middle-resolution optical spectra ($\lambda/\ \Delta\lambda$ ≈1500 and $\lambda/\Delta\lambda \approx 15000$) of comets are presented. The investigated objects are separated into two types: the Jupiter-family comets (81P/Wild 2, 103P/Hartley 2) and the comets of the Oort cloud (C/2007 N3 (Lulin), C/2009 K5 (McNaught) and C/2009 P1 (Garradd)). The spectra were obtained with the echelle spectrograph and with the slit spectrograph installed on the 2-m Zeiss reflector of the High-mountain astronomical station of Institute of Astronomy of Russian Academy of Sciences and Main Astronomical Observatory of National Academy of Sciences of Ukraine at Terskol in 2009–2011. The comparative analysis of the spectral peculiarities of the two types of selected comets is presented. The energy distributions in the spectra for the near-nucleus regions of comets are built and a detailed identification of the spectral emission lines in the spectra is made. The physical parameters of the neutral comas of the comets (velocities of gas expansion, lifetimes of molecules C_2, C_3, and CN, and other parameters) are calculated using the Shulman's and Haser's models. The luminescent cometary continuum level (nonsolar origin) in the spectra of comets is detected. The parameters of the luminescent continuum are obtained. The substances that are luminophors are proposed. The peculiarities of the luminescent continuum of these comets are discussed.