

Low temperature plasma occurs in interstellar gas clouds, solar system, ionosphere of the Earth and is used in plasmatic technologies. The study of the reactions of simple atomic or molecular ions with molecules and electrons in low temperature plasma allows better understanding of chemical processes in interstellar gas clouds and atmospheres of gas giants and gives feedback for quantum mechanical calculations. It also allows to connect new facts gained via astronomical observations. The parameters of plasma (kinetic and rotational temperature of ions, their concentrations, etc.) may vary and many diagnostic technics are used to determine them. The aim of this bachelor thesis is to find suitable infrared transitions of N_2H^+ and utilize them for spectroscopical study of the electron – ion recombination of N_2H^+ ions with electrons.