

Institutsseminar

High-resolution vibrational and electronic spectroscopy of small molecular ions using an ion trap setup

Chiara Schleif

**Max Planck Institute for Extraterrestrial Physics,
Garching– Germany**

In our CCIT 22-pole cryogenic ion trap we are able to measure high-resolution spectra of small molecular ions under conditions similar to the interstellar medium (ISM) using action spectroscopy methods. Our latest projects deal with the symmetric top molecule H_3O^+ and the linear isomers $\text{HCN}^+/\text{HNC}^+$, all of them known to play fundamental roles in chemical processes in the ISM. With our mid-IR laser, we measured rotationally resolved overtone spectra of all three molecules, which contained in the case of HCN^+ an additional rovibronic transition to the first electronically excited state. For HNC^+ , we used optical lasers to obtain low- and high-resolution spectra of the rovibronic excitation to several quanta of the CN stretching mode in the first electronically excited state. In the talk I will give an overview of our experimental setup, the measurement procedures, the resulting spectra and the fitting processes applied to obtain the sets of spectroscopic constants.

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16:30 Uhr

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