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Institut für Ionenphysik
und Angewandte Physik

Institutsseminar

Laboratory molecular spectroscopy and its importance in understanding interstellar chemistry

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Stars form in dense cloud cores that can be studied through the emission of cold dust and molecules. The molecular compositions at each stage of star and planet formation give vital information on the chemical and physical evolution of these environments. More specifically, deuterium fractionation can be used as an astrophysical tool for tracing the chemical and physical evolution in the interstellar medium (ISM). We have begun a systematic study into deuterated complex (6 or more atoms) organic molecules (COMs) to help understand their formation pathways and inheritance through the stages of star and planetary formation. In order to do this, however, we require laboratory spectra. The structural specificity of rotational spectroscopy makes it the best tool for the identification of such molecules in the ISM. This presentation will focus on the laboratory rotational spectroscopy of deuterated isotopologues of the most common interstellar COMs. Each species contain an asymmetrical CH_2D or CHD_2 methyl group resulting in a complex spectral patterns. I will present an update on the analysis of the rotational spectra of these species and interstellar search towards the solar-like protostar IRAS 16293-2422.

HSB 9 **17:15 Uhr** **21.01.2026**