



Einladung zum Vortrag

“Time-resolved Fourier transform spectroscopy based on optical frequency comb sources for spectroscopy of short-lived species”

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Termin: Dienstag, 10.03.2020, 11:00 Uhr, Lehrprobe 11:30 Uhr

Ort: Ludwig-Boltzmann-Hörsaal, Boltzmannngasse 5, Erdgeschoß

Abstract:

Optical frequency combs have found many spectroscopic applications, ranging from fundamental spectroscopy to remote sensing. Combined with e.g. Fourier transform spectrometers, they allow performing cavity enhanced detection over large bandwidth with the comb-mode resolution using fast, compact and robust interferometers. These characteristics make optical frequency comb spectroscopy particularly suitable for laboratory astrophysics studies which usually require studying species in extreme temperature conditions. Numerous applications in this field are looking for a quantitative, multispecies and sensitive instrument enabling detection of e.g. low temperature reaction products or high temperature spectroscopy for line assignments and databases. In particular, the coming launches of the James Webb spatial telescope (JWST, 2021) and of the Atmospheric Remote-sensing Infrared Exoplanet Large-survey mission (ARIEL, 2028) are going to increase dramatically the amount of observations in the infrared spectral range of extraterrestrial objects ranging from interstellar clouds to exoplanets. These large-scale projects from NASA and ESA will require reference laboratory spectra in the matching spectral ranges of the species relevant to astrophysical environments for inversion of the observation data. Such species include hydrocarbons, clusters and free radicals.

I will present my recent works in optical frequency comb Fourier transform spectroscopy. I will also depict the scientific direction of my research, which aims at coupling the optical frequency comb Fourier transform spectroscopy and the cavity ring-down spectroscopy techniques in order to achieve broadband and highly sensitive detection.

Im Rahmen des Vortrages findet eine Lehrprobe zum Thema
“Resolution in linear optics and its limits” statt.