

Colloquium

SFB 956

Conditions and Impact of Star Formation

30.11.2015

Monday 4:00 pm

Physikalische Institute Köln

Lecture Hall III

Zülpicher Straße 77 | 50937 Köln

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A Challenging Journey in High-resolution Infrared Laboratory Spectroscopy

The seminar will focus on the investigation of the absorption spectrum of ammonia ($^{14}\text{NH}_3$ and $^{15}\text{NH}_3$) in the laboratory, in the far to near-infrared spectral ranges. A variety of instrumental techniques and different experimental conditions are used that will be presented. The study of vibrational overtones in the near-infrared range will be highlighted. Although they cannot be accessed as easily as fundamental vibrations, vibrational overtones play an important role in several scientific applications, including detection in the field, as will be demonstrated. Overtones have intriguing properties, facilitate the study of intramolecular dynamics and offer numerous challenges. Among these is the observation of van der Waals complexes. Some ammonia containing weakly bound structures excited in their vibrational overtones happen to show well-resolved spectral structures despite near-infrared energy excites them significantly above their dissociation limit. Unsolved problems concerning the carrier of mysterious bands observed with ammonia and rare gases in a supersonic expansion will be presented. The seminar will focus on trends and challenges and not on detailed spectroscopic aspects.

