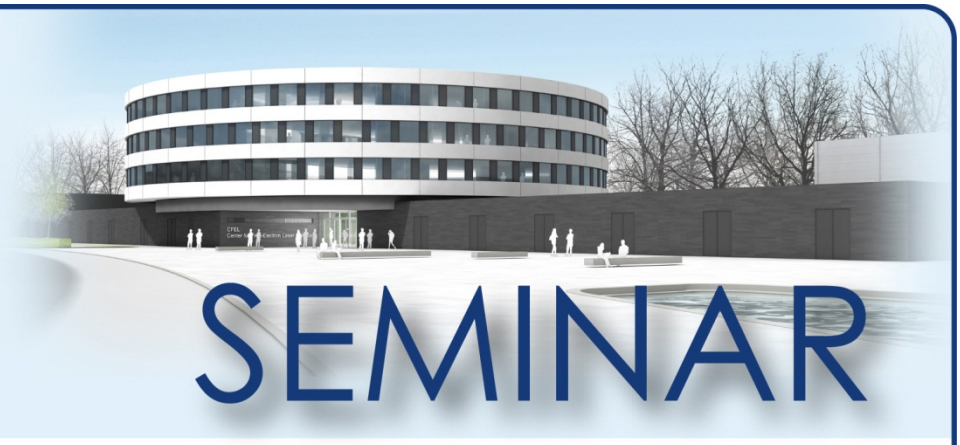
CFEL SCIENCE



SEMINAR

19th January 2012 - 10:00

Building 49, Seminar Room (108)

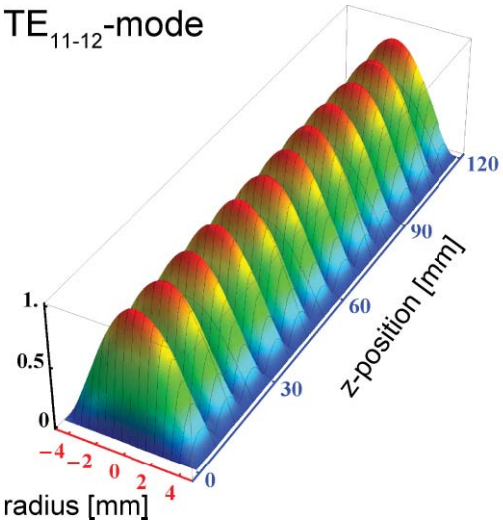
Simon Merz

Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin

Decelerating molecules with microwave fields

An important remaining issue in the field of cold molecules is a general technique to manipulate the motion of polar molecules in high-field-seeking states, which is crucial for the investigation of molecules in their ground states and of all large molecules. Complementary to the already demonstrated and experimentally rather demanding alternating gradient methods, we exploit the interaction of polar molecules with microwave radiation.

We have developed a decelerator for polar molecules that allows motion control in 3D. It consists of a cylindrically symmetric microwave resonator, which is cooled to liquid nitrogen temperature. We are using the $TE_{1,1,12}$ mode, i.e., the decelerator consists of 12 stages. We will present a detailed characterization of the deceleration process, e.g. its phase-space acceptance, and discuss prospects for future experiments, which are opening the door for novel control experiments of larger and ground-state molecules.



Host: Melanie Schnell – CFEL Molecular Physics seminar