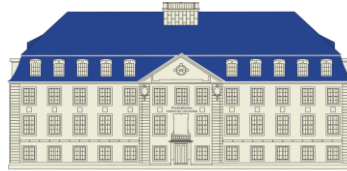




Institut für
Angewandte Physik



Physikalisches
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RHEINISCHE
FRIEDRICH-WILHELMS-UNI-
VERSITÄT BONN

COLLOQUIUM „OPTICS AND CONDENSED MATTER“

Stefan Truppe

Imperial College London

Laser-cooled, polar molecules - a new platform for fundamental physics, quantum science and technology

A high-density ultracold gas of polar molecules has a wide range of new applications. It can be used to study a dipolar quantum gas, to test fundamental physics, and to store and process quantum information efficiently. An array of polar molecules, all interacting with each other via controllable and strong interactions, can serve as a universal quantum simulator of complex condensed matter systems that cannot be modelled by a computer.

Recently, it has become possible to make a magneto optical trap (MOT) of molecules, cool the molecules to microkelvin temperatures and study collisions in magnetic, optical dipole and tweezer traps. In this talk, I will discuss the unique features of molecular MOTs, highlighting their distinct behaviour compared to atomic MOTs. I will also present the outstanding challenges in our pursuit of achieving a degenerate gas of laser-cooled polar molecules.

November 5th, starting with discussion at 17:00 h, talk at 17:15 h, live IAP lecture hall or via Zoom

<https://uni-bonn.zoom.us/j/98441612025?pwd=a01SSjlkY1Q3SDFhL09JQk1qc1V6dz09>

Meeting-ID: 984 4161 2025

Kenncode: 294164