SYDG 1 Ultracold dipolar gases I

Zeit: Donnerstag 10:40-12:55

Hauptvortrag

SYDG 1.1 Do 10:40 HV Theoretical challenges of ultracold dipolar gases — •MIKHAIL Van der Waals-Zeeman Institute, University of Amster-BARANOV dam, the Netherlands

Recent achievements in theoretical studies of ultracold dipolar gases are discussed, with the main focus on the properties of rapidly rotating dipolar gases, both fermionic and bosonic. As demonstrated, these gaseous systems exhibit a large number of strongly correlated states, which are similar to the fractional quantum Hall states, as well as to the Wigner crystal and Abrikosov lattice states, with the allowance of a thorough control of quantum phase transitions between various ground states.

Hauptvortrag

SYDG 1.2 Do 11:25 HV

Optical production of ultracold polar molecules — \bullet Dave de MILLE — Dept of Physics, Yale University, Sloane Physics Lab, New Haven, Connecticut 06520, USA

We have recently demonstrated the production of ultracold, polar RbCs molecules in their vibronic ground state, via a multi-step optical "assembly" process beginning from laser-cooled atoms. The resulting sample has translational temperature T 100 uK and a narrow distribution of rotational states. An extension of our techniques, now underway, should allow study of a trapped sample of absolute ground-state RbCs molecules, opening the possibility to study an ultracold gas in the regime of strong dipolar interactions.

Hauptvortrag

SYDG 1.3 Do 12:10 HV

Dipolar effects on spin-mixing inside a spin-1 condensate -•LI YOU — School of Physics, Georgia Institute of Technology, Atlanta, Georgia 30332, USA

Recent observations of coherent spin-mixing dynamics inside spinor condensates have provided spectacular examples of collective quantum coherence. In this talk, we discuss our theoretical studies of dipolar effects on the spin-mixing dynamics.

Raum: HV