



Seminar

Ultracold polar molecules in a 3D optical lattice



YAN Bo

JILA, University of Colorado

Time: 10:30am, Oct. 10, 2013 (Thursday)

时间: 2013年10月10日 (周四) 上午10:30

Venue: Room 607, Science Building 5

地点: 理科五号楼607会议室

Abstract

Ultracold polar molecules exhibit novel physics in the quantum regime. Especially the dipole-dipole interactions make molecules different than atoms. Observation of this dipole-dipole interactions is a long term goal for ultracold polar molecular physics. Here we report the first observation of dipole-dipole interactions of polar molecules. Using a spin echo technique, we observe the density dependent decoherence, and the contrast oscillate because the dipolar spin exchange interactions. By designing a WAHUHA-type multi-pulse sequence to suppress the dipole-dipole interactions, the contrast oscillation disappears. Besides, we also talk about the quantum Zeno effect, which use chemical reaction between molecules to suppress the tunneling of molecules in a lattice. Those experiments open a way to further study quantum magnetism with polar molecules.

About the Speaker

Yan Bo got his Bachelor Degree from Zhejiang University in 2004 and his Ph.D. from Shanghai Institute of Optics and Fine Mechanics (SIOM) of CAS in 2009. From July, 2009 to June, 2011, he was a postdoctoral research associate in the Center for Quantum Engineering, University of Science and Technology of China. Since June.2011, he has been a Postdoctoral research associate at JILA, University of Colorado, USA. His research interests are cold atom/molecular physics, precise measurement, atomic clock, quantum optics, laser cooling and trapping, atomic chip.