

Dipolar Bose gas: instability and new quantum phases

Yun Li

Swinburne University of Technology, Australia

2016年3月16日(周三) 上午10:30

频标楼4楼报告厅

About the speaker:

2015 – Present, DECRA Fellow, CQOS, Swinburne University of Technology, Australia

2014-2015, research fellow, in Centre for Quantum and Optical Science (CQOS), Swinburne University of Technology, Australia

2013 –2015, research fellow, the Centre for Quantum Technologies (CQT), group of Berge Englert, National University of Singapore (NUS), Singapore

2010 – 2013 CNR Postdoc, group of Sandro Stringari, BEC center, University of Trento, Italy

2006 - 2010 Joint PhD studies at Laboratoire Kastler Brossel (LKB), Ecole Normale Supérieure (ENS) Paris, France and State Key Laboratory of Precision Spectroscopy, East China Normal University (ECNU), China.

2003 - 2006, Graduate studies at Institute of Theoretic Physics, East China Normal University, Shanghai, China.

1999 - 2003 Undergraduate studies at Department of Physics, East China Normal University, Shanghai, China.

Abstract:

The rapid experimental progress of ultracold dipolar gases opens up a whole new opportunity to investigate novel many-body physics. In this talk, I will briefly review recent theoretical and experimental advances in the ultracold dipolar Bose gas with special emphasis on the instability occurring in the system. Then I will present our recent work on the two-dimensional dipolar bosons. By adding a contact three-body repulsion, which can be expected for dipoles in the bilayer geometry with tunneling, it is shown that our model allows for stable continuous space supersolid states in the dilute regime. The zero-temperature phase diagram is studied, and the effect of harmonic trapping is also discussed.