



THURSDAY COLLOQUIUM

Department of Physics, Tsinghua University

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Title Quantum simulation in optical superlattice

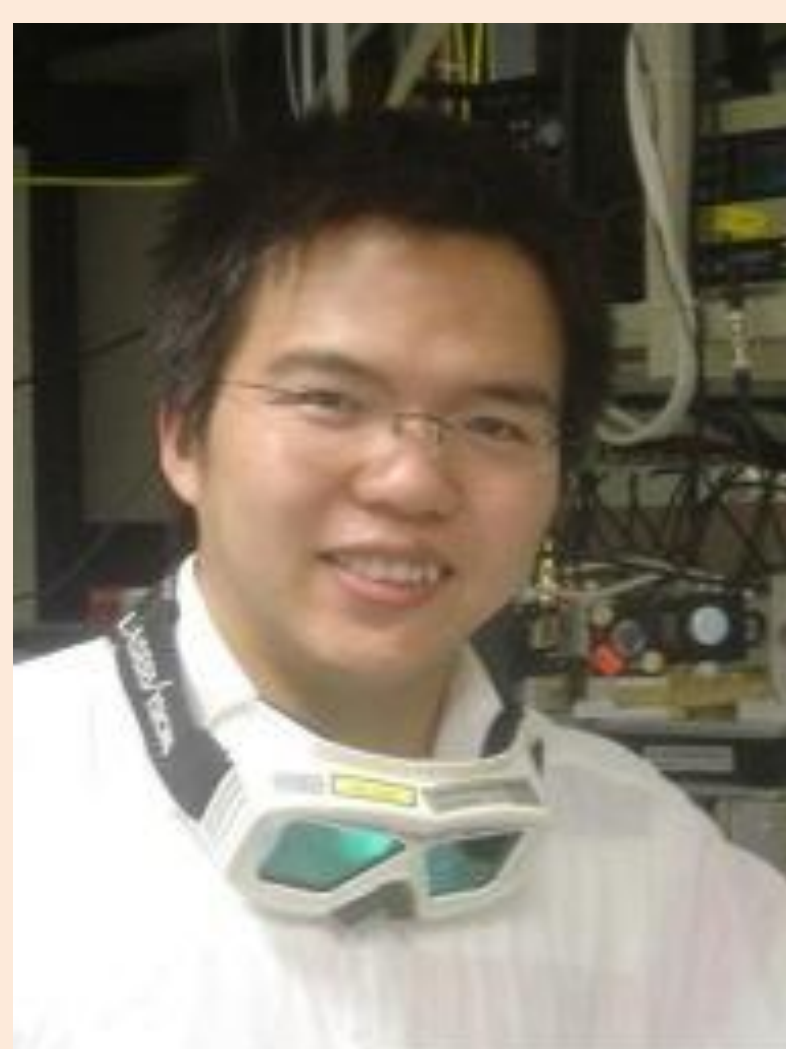
Speaker 陈宇翱 教授
中国科学技术大学

Venue Zheng Yu-Tong Lecture Hall

&Date 16:00 March 15, 2012

Abstract: Ultracold atoms in an optical lattice are promising candidates to study quantum many body phenomena. Here I will present two recent experiments with bichromatic superlattice. In the first part of the talk, I will present our results on direct experimental evidence of a valence bond quantum resonance with ultracold bosonic atoms. Furthermore, I will show how resonating valence bond states with s- and d-wave symmetry can be created and characterized. These two states constitute a minimum basis of a topologically protected qubit. In the second part of the talk, I will report the experimental realization of strong effective magnetic fields with ultracold atoms using Raman assisted tunneling in an optical superlattice. We studied the nature of the frustrated ground state in the presence of an effective staggered magnetic field from its momentum distribution and directly revealed the quantum cyclotron orbit of a single atom exposed to the magnetic field.

Introduction to the Speaker



陈宇翱，男，1981年4月生。1981年4月生于江苏。中国科学技术大学教授。2002年毕业于中国科学技术大学少年班，2004年在中国科学技术大学获理学硕士学位，2008年在德国海德堡大学获理学博士学位。中国科学技术大学教授，中组部首批“青年千人计划”入选者。

长期从事量子物理和量子信息实验研究，取得了一系列在国际上有重要影响的研究成果：已在包括Nature (3篇)、Nature Physics (5篇)、Nature Photonics(3篇)、PNAS (1篇)、Physical Review Letters (22篇) 等五个国际重要学术刊物上发表论文34篇，共被引用1300余次。他参与的研究成果曾先后3次入选欧洲物理学会“年度物理学亮点”及美国物理学会“年度物理学重大事件”。并三次入选两院院士评选的“年度中国科技十大进展新闻”、两次入选教育部评选的“年度高校科技十大进展”。