



Seminar

Artificial magnetic field and spin-orbit coupling for ultracold atoms

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Venue: Conference Room 607, Science Building 5

地点: 理科五号楼607会议室

Abstract

Over the recent years there has been a considerable interest in the artificial magnetic field and spin-orbit coupling for ultracold atoms. In the initial part of the talk we shall provide a background on ultracold atoms and review schemes enabling to generate an artificial magnetic field (artificial Lorentz force) for ultra cold atoms using several light beams. Subsequently we shall talk about possibilities to simulate the spin-orbit coupling (SOC) of the Rashba-Dresselhaus type for ultra cold atoms using several laser beams or a sequence of properly chosen magnetic pulses, and discuss manifestations of such a SOC. We shall also talk about a recent work on the synthetic gauge fields in synthetic dimensions.

About the Speaker

Prof. Gediminas Juzeliūnas received his Ph.D. in 1986 in theoretical condensed matter physics at Vilnius University. Between 1986 and 2000 he worked as a research fellow, senior research fellow, and Senior Research Associate at the Institute of Physics (IOP, Vilnius), Lithuanian Academy of Sciences (LAS) and Institute of Theoretical Physics and Astronomy (IOTPA, Vilnius), and School of Chemical Sciences, University of East Anglia (UK), respectively. In 2000 he became a Principal Research Fellow at the IOTPA, Vilnius University, and from 2008 to 2012 he was a professor of Physics and Technologies at Lithuanian University of Educational Sciences. Now he is the Director at IOTPA. His research area includes condensed matter physics, quantum optics and non-linear optics. Currently he focuses on the ultracold atomic gases and slow light. Prof. Juzeliūnas has made very important contributions to the topic of light induced gauge fields for ultracold atoms, and published over 80 papers in Rev. Mod. Phys., Phys. Rev. Lett., Phys. Rev. A, and Phys. Rev. B, etc.