

专题学术讲座

Polariton Condensate Lattices: A Novel Quantum Simulator Platform



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讲座摘要

Exciton-polaritons, are mixed light-matter quasiparticles resulting from the strong coupling of photons confined in a microcavity and quantum well excitons. Being bosons, polaritons can condense into macroscopically coherent many-body state and have thus emerged as prime candidates for the study of non-equilibrium systems of interacting bosons. Our recent studies, exploit non-equilibrium nature of polariton condensates, showing that polariton condensates can spontaneously magnetize, and how their spin can be controlled both optically and electrically. We employ spatially patterned external laser excitation to create arbitrary potential landscapes for polaritons and demonstrate ferromagnetic and antiferromagnetic coupling between neighbouring condensates. Polariton condensates can be imprinted into arbitrary two dimensional lattices with tunable intra- and inter-site interactions providing exciting opportunities for devising novel and versatile quantum simulation platforms.

主讲嘉宾: P.G. Savvidis

Prof. Pavlos Savvidis has received the B.Sc. in Physics of the University of Athens and doctoral degree from University of Southampton in 2001 focusing on fundamental properties of light matter interactions in low dimensional semiconductor nanostructures. Following post-doctoral stay at the Department of Physics at Santa Barbara, USA funded by DARPA, on the development of THz Bloch oscillator, he was appointed Assistant Professor at the Department of Materials Science and Technology of the University of Crete in 2004. In 2017 he received Researcher Award from Foundation for Research and Technology - Hellas (FORTH) where he holds senior researcher position since 2004. He is receiver of prestigious Leverhulme Professor Fellowship, a one year term he served as visiting Professor at Cavendish Labs of the University of Cambridge. His recognition in the field of semiconductor microcavities is evidenced by >100 publications in refereed journals with the total number of citations to my work exceeding 3000 and numerous publications in high impact journals such as Science and Nature.

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