

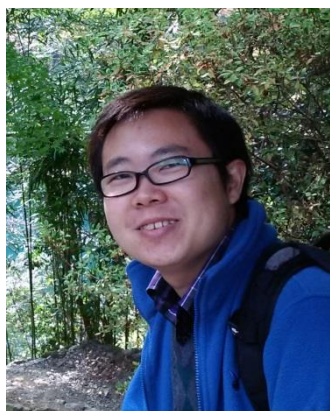


Weekly Seminar

**Two-dimensional coherent spectroscopy:
concepts and opportunities for strongly-correlated electronic systems**

Yuan Wan

Institute of Physics, Chinese Academy of Sciences



Time: 3:00pm, Oct. 27, 2021 (Wednesday)

时间: 2021年10月27日 (周三) 下午3:00

Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

Two-dimensional coherent spectroscopy (2DCS) is a powerful experimental technique that probes the nonlinear optical response of materials. In essence, the traditional “1D” spectroscopy, which measures the linear response, reveals the excitations in a system, whereas the 2DCS unveils the interplay between these excitations. The 2DCS in the infrared frequency range has been widely used in chemistry and biology to unravel the complex structure of molecules. The advent of terahertz 2DCS makes it now possible to apply this technique to solid state systems and, in particular, strongly correlated electronic systems. In this talk, I will give an exposition to the basic concepts of the 2DCS and demonstrate theoretically its potential utilities in quantum spin systems. Specifically, I will show that the 2DCS can resolve the “spinon continuum” from the gapped fractional excitations. For the Luttinger spin liquid, the 2DCS can directly reveal the coherent propagation of the fractional excitations.

About the speaker

Yuan Wan is an associate researcher in the Institute of Physics, Chinese Academy of Sciences (IOP-CAS). Wan obtained his PhD in Physics from the Johns Hopkins University in 2014. Before joining the IOP-CAS in 2018, he was a postdoctoral researcher in the Perimeter Institute (2014-2017) and University of Oxford (2017-2018). Wan is interested in a wide range of topics of condensed matter physics. His current research focuses on (a) the dynamics of many-body systems and (b) the physics of geometrical frustration.