



Seminar

Probing magnetization dynamics and unveiling new electronic phenomena

Dr. Benedetta Flebus

UT Austin

Time: 4: 00 Pm, Jan. 7, 2020 (Tuesday)

时间: 2020年1月7日 (周二) 下午4:00

Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

In the first part of my talk, I will focus on quantum-impurity (QI) relaxometry as a method to probe collective excitations in magnetic insulators. I will introduce a general framework that relates the QI relaxation time to the properties of magnetic collective modes, unveiling novel capabilities of this technique. Specifically, I will show that QI relaxometry can be used as a probe of the antiferromagnetic chemical potential, magnon transport properties and collective modes associated with topological defects. Finally, I will introduce our proposal for coupling distant QI spins via the spin superfluid mode hosted by an antiferromagnetic domain wall.

In the second part of my talk, I will focus on the electronic properties of a carbon nanotube — graphene heterostructure. Motivated by the groundbreaking discovery of the rich phase diagram of bilayer graphene when close to a magic twist angle, we derived a low-energy theory that accounts both for rotations and rigid displacements of the nanotube with respect to the underlying graphene layer. I will discuss our general model and I will illustrate how, even for a vanishing twist angle, rigid displacements of a nanotube with respect to a graphene substrate can alter its electronic structure qualitatively.

About the speaker

Dr.Flebus received her Ph.D. in Theoretical Physics from the Utrecht University in Netherland in 2017.She is currently a postdoctoral fellow in the University of Texas at Austin.