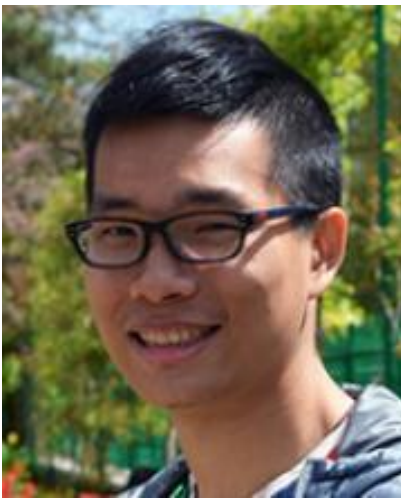




### Seminar

## Visualizing topological and correlated phases with a scanning tunneling microscope



**Yonglong Xie**

*Princeton University*

**Time: 10: 00 am, June. 25, 2019 (Tuesday)**

**时间: 2019年6月25日 (周二) 上午10:00**

**Venue: Room W563, Physics building, Peking University**

**地点: 北京大学物理楼, 西563会议室**

### Abstract

Topology and correlation, fundamental ingredients that often dictate the ground states of quantum matter, leave distinct local electronic fingerprints that can be detected with scanning tunneling microscopy. In this talk, I will first describe a series of experiments demonstrating how the combined influence of magnetism and superconductivity on the one-dimensional helical hinge channel of a higher-order topological insulator can give rise to a Majorana zero mode[1]. Second, I will discuss unusual spectroscopic characteristics found on magic angle twisted bilayer graphene over a wide range of carrier densities, including where superconductivity has been reported to emerge, and how these correlated features allow us to establish a more concrete connection between MATBG and high-T<sub>c</sub> cuprates beyond the phenomenological resemblance of their transport phase diagrams[2].

[1] Jaeck\*, Xie\* et al, to appear in Science. (\*equal contribution)

[2] Xie et al, in preparation.

### About the speaker

Yonglong Xie was an élève normalien étranger at Ecole Normale Supérieure where he earned his Bachelor's and Master's degrees. He has been a PhD candidate at Princeton University working in Prof. Ali Yazdani's lab since 2013. His graduate research focuses on topological superconductivity and Majorana zero modes. More recently, he is also interested in 2D heterostructures such as twisted bilayer graphene.