**The Interplay of Stripe-like Charge orders, Electronic Correlation and Majorana Bound States in 2M-WS2**

 **(Session 2, Oral)**

Wei Li1

1 Department of Physics, Tsinghua University, Beijing, 100084

Abstract text: In this talk, I will show our scanning tunneling microscopy (STM) study on a Fu-Kane topological superconductor 2M-WS2. We observed Majorana zero modes (MZMs) at the vortex cores of the material [1]. Recently, we realized the spatial tuning of MZM by introducing a surface stripe charge order. We found that the charge order does not destroy the bulk topology, but can effectively push MZM downward away from the 2M-WS2 surface [2]. Moreover, we demonstrated that the stripe charge order developed in the vicinity of a strange metal phase in 2M-WS2 [3]. Our results reveal the complex interplay of the charge order, superconductivity, electronic topology and correlation, providing strategies to spatially control MBSs and explore emergent quantum states.

[1] Y. Yuan *et al*, Nature Physics **15**, 1046-1051 (2019).

[2] X. Fan *et al*, National Science Review **12**, nwae312 (2025).

[3] K.Xiao *et al*, submitted (2025).