Majorana zero modes in Kitaev chain and beyond

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Abstract:

Majorana zero modes in solid state system may be building block for topological quantum computation. In this talk I will discuss Majorana zero modes in Kitaev chain and beyond. Specifically, I will discuss 1). exact solution of interacting Kitaev model in the symmetric case [1]; 2). vortex phase transition of the vortex line in superconducting topological insulator in the presence of a hexagonal wrapping term [2]; 3). Spin-polarization dependent tunneling conductance of Majorana zero mode [3]; and 4). A ray of Majorana zero modes in bilayer superconducting topological insulator film in an in-plane magnetic field [4].

References

[1] Jian-jian Miao, Hui-Ke Jin, Fu-Chun Zhang, and Yi Zhou, PRL118, 267701 (2017).

[2] Chuang Li, Lunhui Hu, and Fu-Chun Zhang, to be submitted (2018).

[3] Hao-Hua Sun, et al, Fu-Chun Zhang and Jin-Feng Jia, PRL 116, 257003 (2016).

[4] Lun-hui Hu, Chao-Xing Liu and Fu-Chun Zhang, arXiv:1708.00600, (2017)

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