

# Observation of topological superconductivity and Majorana bound state in an iron-based superconductor

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In this talk I will report our recent discoveries of topological superconductivity and Majorana bound state in Fe-based superconductor Fe(Te, Se). We have obtained convincing ARPES evidence of superconducting topological surface state of Fe(Te, Se) single crystal with  $T_c \sim 14.5\text{K}$  [1]. By using low-temperature STM on this material, we clearly observe a pristine Majorana bound state inside a vortex core, well separated from non-topological bound states away from zero energy due to the high ratio between the superconducting gap and the Fermi energy in this material [2]. This observation offers a new, robust platform for realizing and manipulating Majorana bound states at a relatively high temperature.

## References

- [1] Peng Zhang, et al., Science online DOI-10.1126 (2018)
- [2] Dongfei Wang, et al., arXiv:1706.06074