



# 第 80 回トポロジカル物質科学セミナー Topological Materials Science Seminar (80)

## **Topological superconductors in strongly-correlated electron systems**

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**Place: Room 273, Faculty of Engineering Bldg. #3, Higashiyama Campus, Nagoya Univ. (名大東山キャンパス工学部 3 号館 273 号室)**

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**Time: 10:00-11:30**

### Abstract:

Topological superconductivity (TSC) and topological crystalline superconductivity (TCSC) are exotic topological phases of matter. About two decades of intensive research has revealed that TSC may be realized in hetero-structures. However, topological properties of superconductors in strongly correlated electron systems are not fully explored.

In this talk, we discuss TSC and TCSC in two material platforms. First, we consider two-dimensional *d*-wave superconductivity with broken inversion symmetry, which may be realized in thin films of cuprate superconductors. Application of Zeeman field lifts excitation nodes and realizes TSC with nontrivial Chern number [1]. Generalization to spin-singlet superconductors with other pairing symmetry and proposal of three-dimensional Weyl superconductivity are also discussed. Second, we consider TCSC in a heavy-fermion superconductor UCoGe. We derive Fermi-surface formula for  $Z_2$  and  $Z_4$  indices enriched by glide symmetry, and thereby identify UCoGe under pressure as TCSC [2].

### References

[1] A. Daido and Y. Yanase, Phys. Rev. B, **94**, 054519 (2016)

[2] A. Daido, T. Yoshida and Y. Yanase, arXiv:1803.07786