# 第 107 回トポロジカル物質科学セミナー
Topological Materials Science Seminar (107)

## Refined symmetry indicators for topological superconductors in all space groups

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**Date:** **November 5 (Tuesday), 2019**
**Time:** **15:30-16:30**
**Place:** **Room K206, Main Building, Yukawa Institute, Kyoto U.**

Abstract:

Topological superconductors are exotic phases of matter featuring robust surface states that could be leveraged for topological quantum computation. A useful guiding principle for the search of topological superconductors is to relate the topological invariants with the behavior of the pairing order parameter on the normal-state Fermi surfaces [1]. The existing formulas, however, become inadequate for the prediction of the recently proposed classes of topological crystalline superconductors.

In this work, we advance the theory of symmetry indicators [2, 3] for topological (crystalline) superconductors to cover all space groups. Our main result is the exhaustive computation of the indicator groups for superconductors under a variety of symmetry settings [4]. We further illustrate the power of this approach by analyzing four-fold symmetric superconductors with or without inversion symmetry, and show that the indicators can diagnose topological superconductors with surface states of different dimensionalities or dictate gaplessness in the bulk excitation spectrum.

[1] X.L. Qi, et al., Phys. Rev. B. 81, 134508 (2010), M. Sato, Phys. Rev. B. 81, 220504 (R) (2010).
[2] H. C. Po, A. Vishwanath, and H. Watanabe, Nat. Commun. 8, 50 (2017).
[3] B. Bradlyn, et al., Nature 547, 298 (2017).
[4] S. Ono, H.C. Po, and H. Watanabe, arXiv:1909.09634.

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