

凝縮系物理学ゼミナール

Condensed Matter Seminar

Location: **Room 413**, School of Science Bldg. 5 (理学 5 号館 413 号室)

Date: **13:30-15:00**, Wednesday, 17 October 2018

“Classification of topological crystalline superconducting nodes on high-symmetry line”

Speaker:

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Abstract:

Recent exact classification of a superconducting gap have elucidated unconventional gap structures [1-8], which have not been predicted by the classification of order parameter based on the point group [9]. One of the important previous results is that all symmetry-protected line nodes on mirror- or glide-invariant planes in the Brillouin zone are characterized by a nontrivial topological number [6, 7]. Another discovery is the novel gap structures depending on the angular momentum of the normal state j_z on threefold and sixfold rotational-symmetric lines [1, 3, 8]. Stimulated by these facts, we classify all crystal symmetry-protected nodes (including such j_z -dependent nodes) on high-symmetry n -fold ($n = 2, 3, 4$, and 6) axes, by using the combination of group theory and K-theory [10]. As a result, it is shown that the classification by group theory completely corresponds with the topological classification. We also discuss superconducting gap structures in SrPtAs, CeCoIn₅, UPt₃, and UCoGe.

References:

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