



第 39 回トポロジカル物質科学セミナー
Topological Material Science Seminar (39)

**Physics of Andreev bound states
and odd-frequency pairing**

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Place: K202, Main Building, Yukawa Institute, Kyoto U.

Date : 29th March, 2017

Time: 14:00-15:00

Abstract:

An overview will be presented of the physics of Andreev bound states in superconducting junctions [1-4]. Various types of symmetry of superconducting order parameter will be considered. Influence of impurity scattering effect in unconventional superconductor junctions will be discussed. Special attention will be given to the relation between Andreev bound states and the so-called of odd-frequency pairing. I will summarize the theory the odd-frequency pairing and will discuss its implications in experiments. I will conclude with a discussion of surface bound states and surface impedance in chiral superconductors.

[1] S. Kashiwaya and Y. Tanaka, Rep. Prog. Phys. **63**, 1641 (2000).

[2] M. Eschrig, Phys. Rev. B 61, 9061 (2000).

[3] A.A. Golubov, M.Yu. Kupriyanov and E. Ilichev, Rev. Mod. Phys. 76, 411 (2004).

[4] T. Lofwander, V. Shumeiko and G. Wendin, Supercond. Sci. Technol. 14 R53 (2001).