第 45 回トポロジカル物質科学セミナー
Topological Material Science Seminar (45)

Odd-frequency pairing up to now

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Abstract:

An overview will be presented of the physics of surface odd-frequency pairing up to now[1-2].
The plan of this talk is as follows.
(1)Introduction and Odd-frequency pairing
(2)Ubiquitous presence in superconductor junctions
(3)Impurity scattering effect in superconductor side
(4)Anomalous proximity effect in spin-triplet superconductor junctions
Relevance to index theory
(5)Odd-frequency pairing and Majorana fermion (Majorana fermion always accompany odd-frequency pairing)
(6)Odd-frequency pairing in uniform system and its problem
(7)Odd-frequency pairing in two channel Kondo lattice
I emphasize that odd-frequency pairing ubiquitously presents in superconductor junctions. Anomalous proximity effect in spin-triplet superconductor junctions are most dramatic. The enhancement of local density of states zero energy. In spin-triplet p_x wave superconductor, perfect quantization of conductance at zero voltage appears. This unique feature is due to the anomalous proximity effect by odd-frequency spin-triplet s-wave pairing and index theorem.

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[2]Y. Asano and Y. Tanaka, Phys. Rev. B 87 104513 (2013).
[3]S. Ikegaya S. Suzuki, Y. Tanaka, and Y. Asano, Phys.Rev. B 94 054512 (2016).
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