

A mechanism of unconventional superconductivity in noncentrosymmetric system

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Recently, the noncentrosymmetric system provides many research topics, like spintronics, topological insulator, and unconventional superconductivity.

The lack of inversion symmetry is introduced by an antisymmetric spin-orbit coupling (ASOC), like Rashba- and Dresselhaus-terms. Due to the ASOC, the direction of electron spin is fixed to be perpendicular to the momentum.

In addition, the spin chirality of one Fermi surface is opposite from that of other Fermi surface. These facts are the basis of unusual properties in the system. Furthermore, for the description of superconductivity, we have to consider essentially both spin-singlet and spin-triplet Cooper pairs, because of the lack of inversion symmetry. In the talk, after the introduction of characteristic properties of such systems, a theory of mechanism of superconductivity assisted by a characteristic quantity will be developed.