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Unconventional superconductivity in quantum dot systems

Stephan Weiss

Theoretische Physik
Universitaet Duisburg-Essen, Germany

Abstract:

The formation of electron pairs is a prerequisite of superconductivity. The fermionic nature of electrons yields four classes of superconducting correlations with definite symmetry in spin, space and time.

Here, we suggest double quantum dots coupled to conventional *s*-wave superconductors in the presence of inhomogeneous magnetic fields as a model system exhibiting unconventional pairing.

Due to their small number of degrees of freedom, tunable by gate voltages, quantum-dot systems are ideal to gain fundamental insight in unconventional pairing.