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Odd-Frequency Pairing in Multiband Superconductors

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Abstract:

It is well-known that the fermionic nature of electrons tightly constrains the allowed symmetries of the superconducting gap function. Specifically, in the limit of equal-time pairing and a single-component gap, spatially even-parity gap functions (like s- or d-wave) must correspond to spin singlet states, while odd-parity gap functions (p- or f -wave) must correspond to spin triplet states. However, if the electrons comprising the condensate are paired at unequal times the superconducting gap can be odd in time or, equivalently, odd in frequency. In that case the condensate can be even in spatial parity and spin-triplet or odd-parity and spin-singlet. In this talk I will explain how odd-frequency pairing can emerge in multiband superconductors. I will then focus on the multiband superconductor UPt3, and discuss recent relating observations of the Kerr effect in this material to the presence of odd-frequency pairing.