Spin-polarized superconductivity for spintronics

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The feasibility of superconducting spintronics depends on the spin sensitivity of ferromagnets to the spin of equal-spin triplet Cooper pairs (1). Such pairs are generated at superconductor(S) / ferromagnet(F) interfaces in which certain forms of magnetic inhomogeneity (2,3) are present. In this talk I will introduce the topic of the triplet proximity effect in S-F heterostructures and will discuss my group’s recent progress, which includes: spin-selectivity of triplet Cooper pairs in F-S-F superconducting spin-valves (4) and evidence for the formation of a spin-polarized superconducting densities of state in an s-wave superconductor proximity coupled to a magnetically inhomogeneous antiferromagnet (5).


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