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Spin-polarized superconductivity for spintronics[1]

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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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2. 2. JWA Robinson, JDS Witt, MG Blamire. *Science* 329, 59 (2010).

3. 3. C Klose *et al., Phys. Rev. Lett.* 108, 127002 (2012).

4. 4. N Banerjee, C Smiet, R Smits, A Ozaeta, F Bergeret, M Blamire, JWA Robinson, *Nature Comm.* 5, 3048 (2014).

5. 5. A Di Bernardo, S Diesch, Y Gu, J Linder, G Divitini, C Ducati, E Scheer, MG Blamire, JWA Robinson, *Nature Comm.* 6, 8053 (2015).

[1]Royal Society