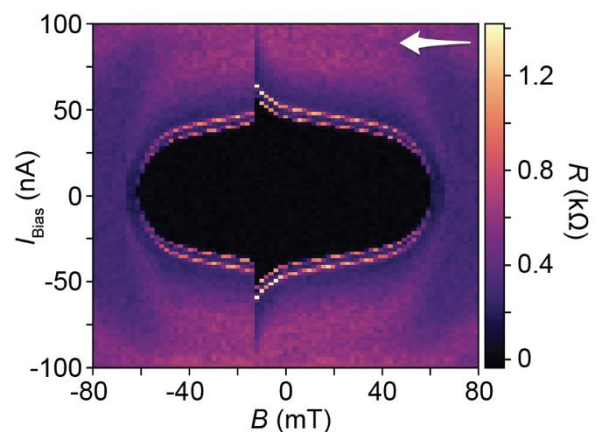




Masters Project in QDev: Superconductors and ferromagnets: fight or compromise?

A new Masters Project is available in the Center for Quantum Devices to experimentally investigate the interaction of superconductors with ferromagnetic insulators as a route to producing spin-triplet superconductors. When simple metals become superconductors at low temperatures, electrons in the metal pair up with opposite spins, resulting in a total electron spin zero in the material. A ferromagnetic insulator grown on the surface of the metal favors spin alignment. Who wins, the superconductor or the ferromagnet? Under the right circumstances, it is predicted that the two opposing trends can find a compromise and form a new kind of superconducting state of electron pairs with aligned spins. Is it true? It's not known. This project is to build devices based on nanowires that encourage the aligned-spin-superconductor state to form and to detect it, if it's there. Read more about the experiment here: <https://arxiv.org/abs/2004.02226>. The project involves nanofabrication and low-temperature measurement in collaboration with PhD students, postdocs, and faculty.



You will learn the physics of semiconductors, superconductors, ferromagnetic insulators, low-temperature measurement, triplet superconductivity and the Josephson effect. Work with the best equipment in condensed matter physics on a problem that the world cares about. Discuss physics with colleagues, become an experimental scientist.

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