

## **Spin Currents in Superconducting Nanostructures**

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With the global energy requirements for the internet's server farms already exceeding the total energy production of the UK national grid, routes to reducing the energy demands of information processing are in urgent demand.

One possible avenue that is attracting interest is to develop superconducting Spintronics devices that propagate either dissipation-less spin polarized supercurrents or transfer pure spin currents (where there is a net flow of spin but not charge) into superconducting structures.

Using a deposition system that we have optimized for producing nanoscale ferromagnetic and superconducting structures, this project will investigate the propagation of spin based information into and through superconducting materials such as aluminium and vanadium.

The successful student will gain experience in a wide range of highly sought after skills, from thin film deposition and cleanroom processing techniques, to high sensitivity electrical measurements at low temperature.