

# Local magnetic measurements of quantum materials

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Magnetic moments and moving charges produce magnetic fields. Probing these stray magnetic fields on a local scale can provide a unique window into emergent phenomena in quantum materials. My lab is using and developing a variety of magnetic probes with a current focus on superconducting quantum interference devices (SQUIDs), Hall probes and nitrogen-vacancy centers in diamond. In this talk, I will discuss some of our recent work that uses these magnetic probes including imaging a spatially modulated superconducting transition in microstructures fabricated from a heavy-fermion superconductor, studying the current distribution and magnetization in a quantum anomalous Hall insulator and measuring the superfluid response of an atomically thin van der Waals superconductor.