

Abstract Submitted  
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**Liquid Helium Level Sensor**<sup>1</sup> KEVIN JAMISON, University of Washington — The spins of electrons bound to donors are promising candidates as qubits for quantum information processing. The quantum properties of these donor-bound electrons are studied in high magnetic fields while immersed in liquid helium at 4K. For stability reasons, the level of liquid helium in the experiment must be monitored with a sensor. An effective way of implementing a sensor is with a superconducting wire. Superconductors have the property of having zero electrical resistance when they are cooled below a critical temperature. Above this critical temperature, the superconductor has significant electrical resistance. Using these characteristics, a superconducting wire can be used to construct a liquid helium level sensor. When current is run through a thin wire submerged in liquid helium, a relationship can be established between the voltage drop across the sensor and the amount of wire submerged in the liquid helium, allowing the liquid helium level to be measured. Results will be presented on the sensor design and performance.

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