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Superconducting Quantum Interference Devices on Tip STEVEN KENNEY, JESSICA NELSON[1], University of Colorado- Denver, SUPERCONDUCTING ELECTRONICS AND LOW TEMPERATURE PHYSICS LAB TEAM
— An effective method to investigate the nature of fundamental physics is magnetic field imaging at the nanoscale. To measure a field at this scale necessitates the use of a highly sensitive sensor, the superconducting quantum interference device (SQUID) on tip (SOT), which operates with nanoscale resolution while maintaining operational capacity a similar distance from the system of interest. The SOT thus has the capacity to measure magnetic fields of a single electron. This experiment consists of assembling a vacuum-sealed probe, cooled to near absolutely zero, which will allow us to study and optimize properties of the SOT. Auxiliary aspects of the experiment include setting up a Data Acquisition (DAQ) system to automate our experimental procedure and data collection. Short-term goals include finalizing the assembly of the probe, instrumenting the superconducting amplifier, and confirming the functionality of the SOTs from collaborators in Israel. Long-term research will involve studying high-frequency properties of the SOT and using this information to optimize SOT sensitivity.

[1]Experiment done in lab affiliated with UCD but I am an MSU Denver student

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