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Thermopower Puck for Measurement of Thermodynamic Properties[1] ANDRES VARGAS, RYAN FUKUDA, NICHOLAS SOLIZ, PEI-CHUN HO, Department of Physics, California State University, Fresno — A thermopower puck was created in order to measure the thermoelectric power and thermal conductance of strongly correlated electron materials from 10K to 300K. The puck consists of a 2kΩ resistivity heater and 2 thermometers. The heater is connected to the top of the sample and applies heat until thermal equilibrium is reached. This creates a temperature gradient across the sample and is read by the 2 thermometers, one reading the hotter temperature and the other reading the colder temperature. The wire that is used as the thermal anchor for the high temperature thermometer, which is electrically isolated from thermometer, is also used as one of the leads to measure the thermal voltage produced across the sample. To calibrate the measurement probe, the thermoelectric power and thermal conductance of a nickel sample, which was purchased from Quantum Design, was measured. The data obtained qualitatively agrees with the literature data provided to us by Quantum Design. For future work, we will be using the measurement probe to investigate the thermodynamic properties of intermetallic compounds.

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