

Abstract Submitted
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Apparatus for the Measurement of Thermoelectric Power¹ SHOJI HISHIDA, PEI-CHUN HO, Physics/CSU-Fresno — The Seebeck Effect refers to the electric potential that is established in a material under an imposed temperature gradient. This effect provides a useful tool for characterizing the thermal and electric transport behavior of materials. A measurement probe is under development in order to measure the Seebeck Coefficient (Thermoelectric Power) of a sample over the temperature range from 10 - 300 K in a cryocooler system. The sample is mounted between two platforms: one that is thermally connected with the measurement probe and another that is thermally isolated, referred to as the cold and hot platforms respectively. A 2k Ω resistance heater on the hot platform is used to establish a temperature gradient across the sample and between the two platforms. A Cernox resistance thermometer measures the temperature of the cold platform, and a Type T differential thermocouple, composed of copper-constantan-copper wires, is used to measure the temperature difference. The probe will be calibrated using the known thermopowers of Nickel, Platinum, and Chromel samples. The performance results of this design will be presented.

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