Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Stand alone, low current measurements on possible sensing platforms via Arduino Uno microcontroller with modified commercially available sensors MEGHAN TANNER, GABRIEL HENSON, INDRAJITH SENEVIRATHNE, Department of Geology Physics Lock Haven University — Advent of cost-effective solid-state sensors has spurred an immense interest in microcontrollers, in particular Arduino microcontrollers. These include serious engineering and physical science applications due to their versatility and robustness. An Arduino microcontroller coupled with a commercially available sensor has been used to methodically measure, record, and explore low currents, low voltages, and corresponding dissipated power towards assessing secondary physical properties in a select set of engineered systems. System was assembled via breadboard, wire, and simple soldering with an Arduino Uno with ATmega328P microcontroller connected to a PC. The microcontroller was programmed with Arduino software while the bootloader was used to upload the code. High–side measurement INA169 current shunt monitor was used to measure corresponding low to ultra-low currents and voltages. A collection of measurements was obtained via the sensor and was compared with measurements from standardized devices to assess reliability and uncertainty. Some sensors were modified/hacked to improve the sensitivity of the measurements.

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Date submitted: 12 Nov 2016 Electronic form version 1.4