

Abstract Submitted  
for the DNP17 Meeting of  
The American Physical Society

**Temperature Stabilization of the NIFFTE Time Projection Chamber**<sup>1</sup> CALEB HICKS, Abilene Christian University — The Neutron Induced Fission Fragment Tracking Experiment (NIFFTE) is a collaboration measuring nuclear fission cross sections for use in advanced nuclear reactors. A neutron beam incident on targets of Uranium-235, Uranium-238, and Plutonium-239 is used to measure the neutron induced fission cross sections for these isotopes. A Time Projection Chamber (TPC) is used to record these reactions. Significant heat is generated by the readout cards mounted on the TPC, which are cooled by fans. One proposed measurement of the experiment is to compare the cross sections of the target to a proton target of gaseous hydrogen. A constant temperature inside the TPC's pressure vessel is desirable to maintain a constant number of hydrogen target atoms. In addition, a constant temperature minimizes the strain and wrinkles on an amplifying mesh inside the TPC. This poster describes the successful work to develop, build, and install a fan controller using a Raspberry Pi, an Arduino, and a custom circuit board to implement an algorithm called Proportional-Integral-Derivative control.

<sup>1</sup>This research was supported by US DOE MENP Grant DE-FG02-03ER41243.

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Date submitted: 27 Jul 2017

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