

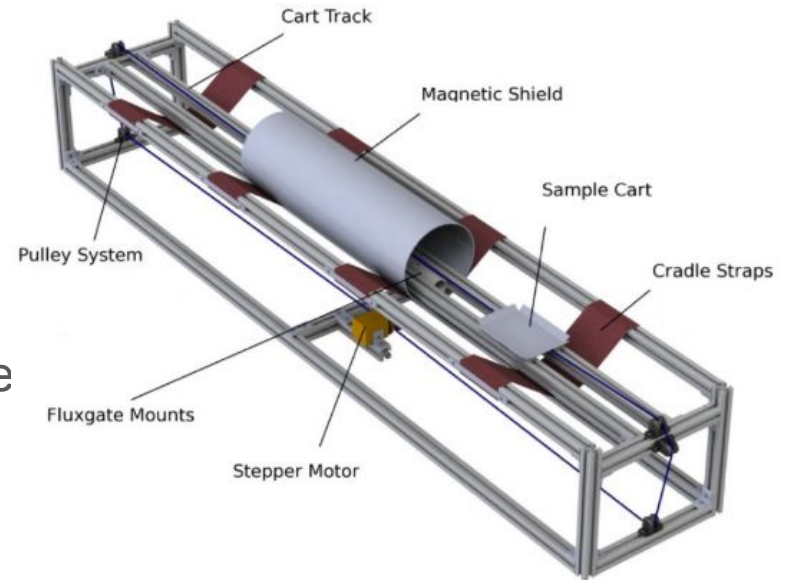
Gradiometer

Nadia Chigmaroff

TUCAN Collaboration Meeting
August 9 2018

Overview

- Purpose: assess magnetization of nEDM components.
- Stepper motor moves sample on cart through mu metal shield.
- Differential measurement taken by both fluxgates.
- Python script controls movement of sample and readout.



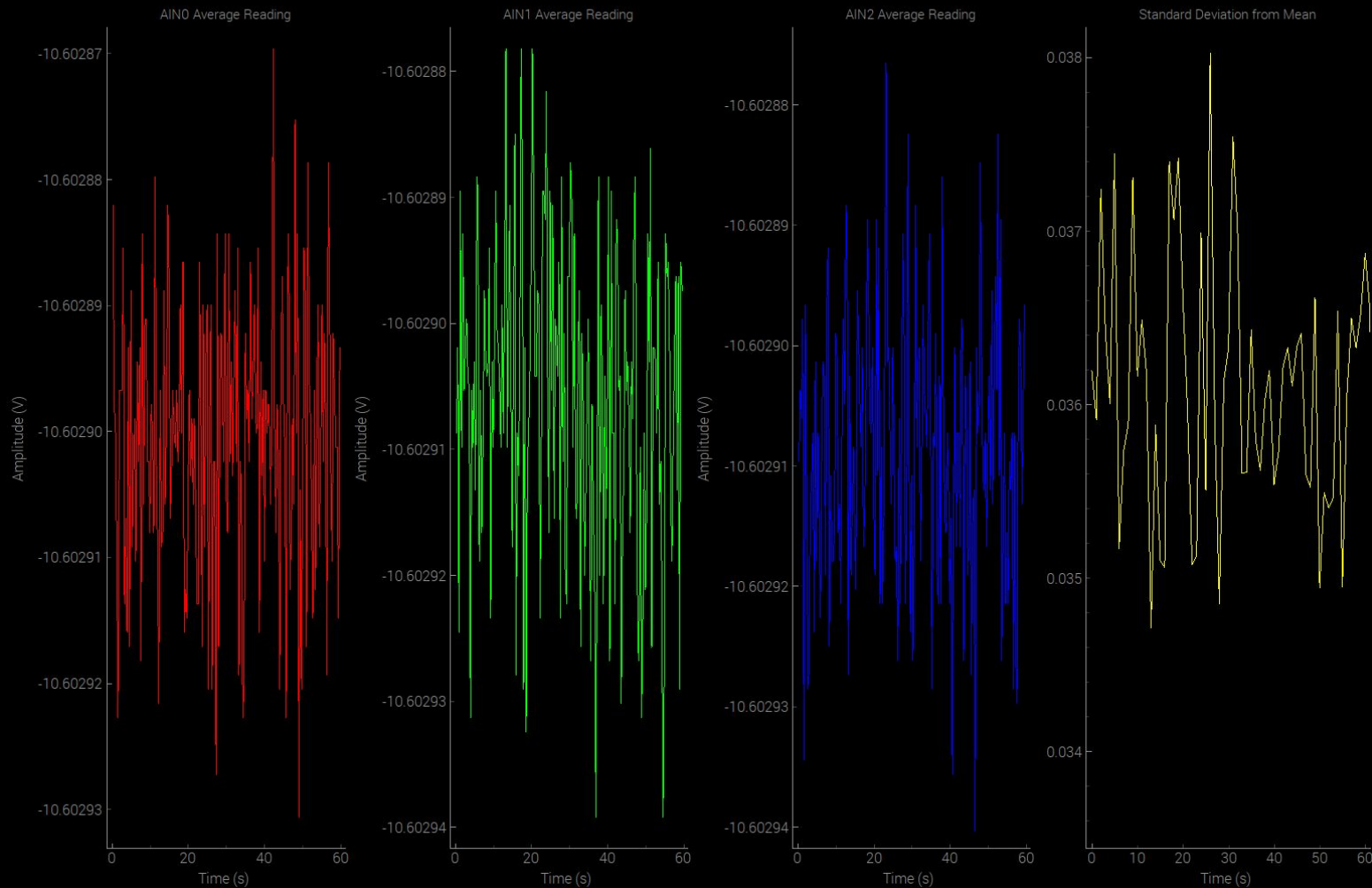
Current Gradiometer Status

- Mu metal shielding characterized by a previous student
 - Measurements to be re-done using new fluxgates
 - Dynamic shielding to be measured using perturbation coil
- New materials are currently arriving in order to build transport system.
- Fluxgates are connected to LabJack U6-Pro analog to digital converter.
- LabJack is connected to a Raspberry Pi 3
- Python script runs on the Raspberry Pi and begins/ends sampling.

Python Script: Current Functionality

- Uses LabJackPython's U6 module
- Multifunctional:
 - Start readout from single fluxgate
 - Read data out to terminal screen, log data to text file.
 - Live graph readout from each analog input on LabJack - up to six graphs (two fluxgates)
 - Graph standard deviation from mean
 - Auto-save graph image

Save Graph Image



Python Script: Future Outlook

- Control stepper motor: setup not yet implemented
 - Graph both directions of cart travel on the same graph.
- More functional GUI:
 - Stop and start and enter parameters through GUI.
 - Full readout into program: no need for any command line use.