Fermilab

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FTBF Future Plans

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Overview

- This talk will cover some ideas of what we'll focus on in the next 2-5 years.
- Each topic will list the goal of project, what's been done, who is working on it and any funding needed (where possible)
- There are clearly things we can work on at the test beam (based on recommendations from the committee, feedback from the community), mostly short term projects.
- Overall future of the test beam depends on the direction the lab wants to talk

A test beam DAQ

- **Project goal: Develop a DAQ system that controls the facility instrumentation. Also available for experimenters to use. This will include slow controls (temp, HV, LV, etc)**
  - Currently developing MIDAS from PSI. Has a history of being used in test beams, some Fermilab knowledge, responsive developers
  - Will then develop ArtDAQ. Used by Nova. Would be supported by CD.
- **Current Status**
  - MIDAS is installed. MWPCs have a working frontend, first developed by T1042. They are continuing to help with commissioning and developing it for the test beam. A small minnow board has been installed to accept accelerator signals.
- **Manpower and funding**
  - There is some manpower devoted to this currently. Probably enough to start with
  - Slow control system would need to be develped, Cost on the order of 1.5k

Simulations and Software

- **Project Goal: Develop beam line and instrumentation simulations. Continue to develop analysis code**
  - Doug Jensen has tracking code for the MWPCs. Would want to gather into one place (repository), continue to develop as needs arise
  - Michael Backfish does beamline simulations. Would like to move to G4Beamline.
  - Monitoring code to go along with DAQ
- **Current status**
  - There is existing code for many of the instruments. Dough Jensen is actively continuing to work on this.
- **Manpower and funding**
  - One idea in the works is to have North Central College work with us on simulations and analysis code. Would provide us with manpower and students with learning opportunities. This is in the works.

Updated Instrumentation

- **Project goal: Provide instrumentation that is current and sufficient for users to test their equipment against. Update electronics.**
  - Needed info: E/p spread, beam profiles, particle ID and beam composition, duty factor
  - Possible instrumentation: Cerenkov, MWPCs, spectrometer, ToF
- **Current Status**
  - Planning and running beam studies with current instrumentation to make sure we efficiently use what we have
  - Pursuing a spectrometer. AD is finding a magnet, we would do the instrumentation .
- **Manpower and funding**
  - A proposal would be to develop instrumentation and have mini review with experts at the lab to make sure any new instruments are useful
  - Potentially need a lot of funds. New electronics, crates, HV systems, etc to modernize the facility will be expensive.

Documentation and Procedures

- **Project Goal: To solidify procedures, gather documentation in one place, streamline things as much as possible**
  - The equipment at the test beam needs to be documented in an easy to find place.
  - A paper to live on the arXiv about the facility for easy of reference.
  - List of procedures for incoming/outgoing experimenters
  - Historical documentation
  - Elogs
- Much of this exists. The goal for the next year is to improve accessibility, continue to update the website.
- Procedures will be written down and streamlined where possible
- Elogs for all groups

Outreach

- **Project goal: Bring in students (HS->Undergrad->Grad) to work on the test beam facility.**
  - This past year, we had ~20 HS students perform 2 different experiments
  - CERN has a similar program
  - Promote test beam facility as a place for college students to get experience with beam (T1059)
- **Current Status**
  - Group from RI has expressed interest (HS)
  - Want to get info out to community to send students
- **Manpower and funding**
  - Possible travel grants? Will have to explore.
  - Support for students/postdocs?
  - Will need to be careful to not oversubscribe mentors

Conclusions

- We have goals to modernize the test beam facility,
- We need guidance on what we are missing.
- Using students as helpers, much of this work can be accomplished on a 2-5 year time scale.