

# FRIB Data Acquisition Working Group

- **Charge:** Develop plans, Define scope, Set priorities, Build teams
- **Scope:**
  - Data acquisition - readout, run control, time synchronization, device control
  - Data movement - buffer transfer, event building, buffer/event storage in files, serving files to experimenters
  - Data analysis - Online and offline, data display

# Recent Activity

- **Workshop:** Held at Physics Division, Argonne National Laboratory, July 29-30, 2015
  - Program:
    - Working group data acquisition requirements - 11 collaborations
    - Computing, networking, data acquisition and analysis infrastructure at NSCL
    - Experiences integrating multiple, complex detector systems into single experiments, especially event building and time synchronization - mostly using digital data acquisition.
  - Discussion of important issues and developments necessary for a successful FRIB data acquisition and analysis environment
  - ***Data Acquisition support - Protocols and interfaces***
    - ***Recommended practices to help all systems work together with each other and the common resources at FRIB***
    - **Time** – identification or development of time distribution protocols, interfaces and hardware to enable high precision coordination of experimental systems and event data time stamping,
    - **Run Control** – interfaces that enable unified control of complex detector arrays and accelerator resources,
    - **Trigger Exchange** – standards that allow detector systems to exchange and record event-by-event information about trigger conditions,
    - **Event Builder** – application programming interfaces to the event builder, protocols for exchange of event building information and specification of metadata that supports event building,
    - **Accelerator and beamline controls Interfaces** – working with the FRIB controls group to develop efficient interfaces to accelerator and beamline information and controls, especially identifying those parameters and controls that require experimenter access.
  - ***Data Analysis support***
    - **New Tools for data analysis** - Having sufficient resources for analysis, availability of data, new techniques for analysis

# Upcoming Activities

- **Panels on Protocols and Interfaces (Only two at this time)**
  - ***Time stamping and trigger synchronization*** - tagging events with the best time possible and synchronizing events across multiple detector systems
  - ***Accelerator/Beamline Interface and Controls*** - control of beamlines and readout of accelerator parameters important to the experiment
  - *Start by **September 11, 2015**.*
  - Collaborators needed!
- **Data Acquisition Workshop in Mid CY2016**
  - Review accomplishments to date, new needs
- **Data Analysis Workshop** -
  - Big Data Techniques - mid to late CY2016
- Contact Robert Varner ([varnerri@ornl.gov](mailto:varnerri@ornl.gov)) to collaborate in panels and/or join the working group
- See our web page at <https://www.phy.ornl.gov/fribdaq>.