

# ePIC Electronics and DAQ WG Meeting

1. Introduction / News / Upcoming activities and events
2. Slow Controls Planning (Lee Flader - BNL)

## I. Upcoming Talks / Meetings

1. EICUG / ePIC Collaboration Meeting in Warsaw
  - July 23-31
  - DAQ talk on Friday July 28 (Jeff / Fernando)
2. AGS/RHIC User Group
  - Aug 1-4 (New Detectors and Technologies Workshop on Aug 2<sup>nd</sup>)
  - Speaker TBD for ePIC DAQ overview (likely present/past convener)
3. Streaming Workshop XI (Satellite to APS Hawaii)
  - Oct 10-14
  - Jo has submitted abstract for ePIC DAQ overview

## II. RDO

1. Form Factor / Connectors for different detectors need to be defined.
2. Engineering efforts for each detectors RDO/generic RDOs need to be well defined
3. Locations need to be defined
4. Meetings with detectors starting next week
  - Tuesday 18<sup>th</sup>: 8:30-9:30      Si Tracking/Gaseous Detectors/TOF
  - Tuesday 18<sup>th</sup>: 12-1          dRICH / hpDIRC / pfRICH
  - Friday 21<sup>st</sup>:    12-1          HCALs
5. Timing Group
  - Summer is now here, hopefully these efforts can begin
  - Distribution of electronics has started

### III. ePIC Streaming Computing Model Working Group

1. First Meeting held 7/11 @ 9am, Next meeting 7/18 @ 9am, then biweekly
2. The most important priority of this group is to generate the requirements for the institutional needs for the data centers, and to incorporate international collaboration at the data center level. These need to be defined for reviews in December.
  - Key goal is the rapid turn around of reconstructed data / (and expedited physics)
  - They need understanding of data / data sizes
  - Need to have understanding of tasks
  - There may be new types of requirements, particularly if we find significant uses of AI/ML, because that entails training data sets, tracking of this training, validation of algorithms, potentially things like real time simulation in parallel to data taking for validation.
  - My biggest concern from the DAQ perspective is making sure that interfaces to the reconstruction / data centers are well defined
    - Data formats
    - Metadata & DBs
    - Real time calibration data

## IV. Data Volumes

1. The “Background Group” (<https://wiki.bnl.gov/EPIC/index.php?title=Background>) has been very active defining rates
  - Synchrotron Radiation
  - Electron Beam Gas
  - Hadron Beam Gas
  - Radiation Doses
  - DIS
  - A “Mixer” to put these together incorporating integration times for studying tracking/etc.
2. We have not yet followed up on this
  - I will take their tables, apply reasonable hit sizes and charge sharing (and to the extent I can the noise numbers from the detector spreadsheets) and produce average data rates by detector, and by RDO
  - We need volunteers to actually apply the counting through simulations into DD4HEP “metrics” and then refine to actual RDO / channel locations

## V. Slow Controls

- From the project perspective there are two WBS entries under DAQ
  - 10.6.9.1 is DAQ,
  - 10.6.9.2 is Slow Controls Integration
- 10.6.9.2 contains network gear, servers, racks and a very limited amount of manpower to advise/integrate the slow controls from each detector
- Discussions to date have led to a few points but are not yet well defined
  - We hope to have integration with the collider at some level
    - Same types of software/hardware
  - We need integration with DAQ
    - Some slow controls information in data stream
    - The potential for DAQ to initiate (some) slow controls activities
- Lee Flader (BNL – instrumentation group) has been recently brought by Elke/Rolf to help define the Slow Controls
  - He has recent experience with sPHENIX slow controls
  - Focus on Barrel HCAL as an example