

ATHENA Far-Forward DWG Updates

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Overview

- Proposal was turned in to committee on December 1st.
- DPAP presentations happened Dec. 13th to 15th – presentations from all proposals went very well.
 - Very good showing for the overall EIC community.
- DPAP questions released shortly after.
 - FF group had very few questions.
 - Calibration approach (for all subsystems).
 - What if AC-LGADs aren't available?
- DIS 2022 abstracts.
 - We were told by ATHENA management that each WG should submit an abstract. We have one prepared for the FF group.
- Work going forward.

Work Going Forward (simulations)

- Continue refining implementation of the FF detectors in DD4HEP.
 - Regardless of what happens with the proposal decisions, DD4HEP is a good, future-thinking framework that the community should continue to develop going forward.
- Roman Pots and OMD
 - Add algorithm to process multi-track final states (to filter background, handle He-3 spectators, etc.).
 - Begin work on algorithm to accurately reconstruct off-momentum particles.
 - Transfer matrix is specific to a certain orbit – reconstruction begins to degrade as you move away from the orbit expected for a particular matrix.
- B0 detector
 - Still waiting on updates to ACTS to finish tracking testing in B0 detector. Have genfit setup working in EicRoot so we have a benchmark (used for proposal).
 - Begin evaluating EMCAL for the B0.
 - There is lots of interest for this subsystem. Our proposal assumed, based on project guidance, that we could not fit an EMCAL in the bore along with the tracking system. We can start looking at what the requirements really are in more detail.
- ZDC
 - Work on full reconstruction in DD4HEP (done in standalone G4 simulation for proposal for expediency).
 - Begin study of imaging layers.

Work Going Forward (technology)

- AC-LGAD development is aiming more toward usage in the TOF system.
 - This will mean an aim toward a strip detector.
 - We will start evaluating the use of MAPS + timing layer (considering various options) in the event that the AC-LGAD development progresses this way.
- B0 EMCAL options.
 - We proposed W/SciFi towers for the EMCAL in the ZDC – could we use this in the B0?
 - What would the space needs be (towers are 17cm long, 2.5cm x 2.5cm transverse; added length of PMTs, cabling, etc.)?
 - If we use PMTs, need to figure out the configuration since the system is inside the magnetic field.
- ZDC imaging layers.
 - Silicon layers, or scintillating fibers?