Minutes of ePIC Far-Forward Meeting for 6/27/2023
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Present: Alex Jentsch, Michael Murray, Zvi Citron, Elke Aschenasuer, David Ruth, Dien Thi Nguyen
Sakib Rahman, Lynn Wood, Po-Ju Lin, Lynn Wood
Yulia Fuletova, Janusz Chwastowski, Włodek Guryn, Nathaly Santiesteban,
Eden Mautner, Shujie Li, Sakib Raman

Agenda, slides, and recording at https://indico.bnl.gov/event/19941/

General Updates:
At TIC meeting on Monday reported on status of Far-Forward detectors. Currently waiting for engineering support for integration of Roman Pots and Off Momentum Detectors (vacuum and impedance resolutions).

For Roman Pot and Off momentum reconstruction: working to use Machine Learning approach as the default, since this is easier to adapt for different changes.

Other integration issue is that the neutral particle Zero Degree Line goes through 3 out of 4 of the flanges for the Roman Pot and Off Momentum detector support components.

B0: Zvi
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For B0 maps is off the table. One layer will be AC-LGad. For the other layers Zvi is not sure. Could be AC-LGads or TimePix.

Similar performance for both if you use charge sharing on AC-LGADs. Need to test both for radiation hardness.

Alex: Any loss in charge sharing will drop spatial resolution below what we can tolerate for physics.

ZVI: Note LHC LGADs rated for 1000 times expected EIC radiation levels.

B0 is very hot for both neutrons and other particles. Neutron fluences few 10^12. DC-LGADs tested to 10^15 and ATLAS found its timing resolution increased by a factor of 2.

Yulia: Have you looked a VeloPix (being used by LHCb) for vertex detector)? Supposed to be rad hard.

For the calorimeter the temperature dependence of PbW04 might be a problem. LySo is better in almost all parameters (check radiation). Cost?

Julia for B0 calorimeter how are we going to do readout? We have very little space.
Zvi thinking of SiPMs.

Po-Ju commented that the ZDC group is not sure whether to go for APD or SiPM. Major concern is radiation damage, APDs seem more susceptible to damage.

>>> Todo: B0 and ZDC group talk about crystals and readout
>>> Todo: Alex will ask EPIC AC-LGAD group about radiation hardness.

B0 in ACTS: Sakib
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Question from last week: Why do we only see 20% of tracks.
1) Go to 100 GeV protons. Of 1000 events only 367 got 1 hit on the first plane. Can get momentum for only 200/1000 events. If he turns of the main magnet things don't improve.

Alex suggested applying a crossing angle boost of 25 mrad. This doubles the number of events that get 1 hit on a tracker and 74% of events have reconstructed momentum.

Next steps >>> Check why momentum distribution is skewed. It seems to shift with main magnetic field. Work with more realistic tracking and understand what changed in ACTS that B0 now works.

Michael Pitt asked that pull request be made public so that he could use it.
>>> Todo: Sakib will do this.

>>> Well done Sakib!

Next Meeting
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Next Tuesday we will not meet because of 4th of July and on the 11th we should have a cross cutting meeting with Nathaly and Simon for Far Forward/Far Backward. If you have updates please send to the full mailing list.

========== Submitted by Michael and Alex ==========