

Subject: TIC meeting 2/26, 2024 (planning for TDR effort (tracking update) - main outcome

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Dear Colleagues,

this e-mail is to underline the main outcomes of the Feb. 26 TIC meeting, extremely informative thanks to the excellent reports by the reporting speakers. In the following, only major highlights will be underlined

SVT update

The agreement document with CERN related to ITS3 matter has largely progressed and, presently, two ePIC colleagues are working together with the ALICE ITS3 team at CERN. The differences between MOSAIC (ITS3 for ALICE) and EIC-LAS (ITS3 for ePIC) have been illustrated: in EIC-LAS part of the control functions can be implemented in an ancillary chip. This approach can help in saving on costs and time. The current model for the implementation of the staves (external barrel layers) and the disks (end-caps) have been illustrated.

MPGD update

The layer of cylindrical MM will be formed by 4 single-layer detector units with 2-D read-out, each about 50 cm long and with two different radii for better integration. 2-D readout tests planned at CERN in 2024, following those at MAMI (Mainz) in 2023. The size of the 12 elements of the microR-WELL for the outer tracker is 34 cm × 170 cm. They foresee U and V read-out with FEE card on the rear side distributed along the detector length. The technological choices are:

- thin gap ionization / drift volume
- 1 mm ionization gap (GEM to cathode) & 2 mm induction gap (GEM to μ RWELL)
- 3-layer capacitive-sharing U-V strip readout:

*Strip pitch: 0.8 mm (along U and V axis)
*Trace pitch: 1.14 mm along horizontal axis (traces).

The endcap disks will be in microR-WELL technology formed by 2 or 4 elements each. MPGD integration aspects could largely progress thanks to the workshop at BNL on 02/20/2024. The simulation in the MPGD sector is also progressing, in spite of further work needed.

Central Detector integration

The overall support system for inner detectors including all barrel trackers, apart the one

external to DIRC, and the ToF barrel layer is under study. The study includes the mounting strategy.

Tracking update

A comprehensive report about status and progress in tracking is provided.

With truth-seeded tracking, single-particle tracking looks reasonable for particles generated both on and away from the z axis. Studies of primary vertex finding and fitting performance is ongoing.

With real-seeded tracking, single-particle real-seeded tracking looks reasonable for $|z| < 10\text{mm}$, as well as for generation points up to 1 mm in the transverse plane, while for z values near the edge of the beam spot, inefficiency is present.

There is ongoing effort to implement the ACTS ambiguity solver into EICRecon. Another ongoing effort is for understanding the effect of the initial error matrix on the input parameters that result from the seeder.

If this notes need corrections/integration, please, write me back.

Thank you.

Best greetings, Silvia

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