

**Subject:** TIC meeting 4/22, 2024 (TDR effort, progress (PID); far backward detectors) - main outcome

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Dear Colleagues,

this e-mail is to underline the main outcomes of the April 22 TIC meeting, dedicated to (i) TDR structure, subsystem template, (ii) TDR effort, progress (PI) and (iii) far backward detectors.

The careful reports by the speakers have been appreciated.

(i) TDR structure, subsystem template

The scheme for the Subsystem text in the TDR, a revised version of the one discussed on March 11 including the suggestions collected at that time, has been presented and it received no

further comments. Therefore, this scheme is adopted (copied at the end of this e-mail for completeness).

A different point was widely discussed: the length of the TDR section dedicated to the ePIC detector, where the reference length of 150-200 pages is regarded as totally inadequate. This length will be further considered with PM. A possible way-out has been mentioned, namely to make the text in the (pre-)TDR an executive summary, while the detail description is in the Annexes to the TDR.

In this case, the ANNEXes can be substantially long.

The need of a further pass on this topic is recognized and it will be scheduled at a next TIC meeting.

The matter of the FEE ASIC for pFRICH and hpDIRC is mentioned, where the options are a version of the HGSROC or the FCFD. It is decided to address this matter on April 13, when the overall matter of the PID photosensors will be addressed.

(ii) TDR effort, progress (PID)

An advanced set of key plots from the PID DSCs to be included in the (pre-)TDR is presented.

A common agreement on the recipe to be used when defining the number of sigma's separation for particle i and j has been discussed and agreed upon: distance between i and j Cherenkov angle peaks in units of the mean value of the two distribution r.m.s. .

The need of a 2-D plot of event distribution frequency in the plane  $p$  vs  $\eta$  that supports our PID subsystem choices is mentioned: the currently used one is not fully adequate.

## (iii) planning TDR effort - far backward subsystems

The planning has been presented for the Lumi DSC, including both the Pair Spectrometer and the Direct Photon.

A color-code is adopted to underlining the items requiring further work and the most critical ones.

Pair Spectrometer critical items:

- Services (cooling, gas system, sensor power supply, FEE power supply...)
- ES&H aspects and QA planning
- Collaborators and their roles, resources and workforce -- Limited Workforce
- Risk and mitigation strategy.

Direct photon critical items:

- Performance from available input (lab studies, test beam, prototyping)
- resources needed for FEE development.

A careful and detailed planning for the low-Q2 taggers is presented, including the time-line over 2024 for all the different activities.

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

Thank you.

Please, excuse the delay in distributing these e-mail.

Best greetings, Silvia

Detector text in the TDR, a scheme

#### FOR EACH SUBSYSTEM

- Requirements
  - From **physics**
  - **Radiation hardness**
  - Expected **data rates**
- Justification
  - Device **concept and justification** for the technological choice
  - **Description**
    - General device description
    - Sensors
    - FEE (for rates with reference to a global table in electronics/DAQ section)
    - Other components (f.i.: radiators in calorimetry and in Cherenkov devices, ...)
  - **Performance** from available input (lab studies, test beam, prototyping, simulation studies)
- Implementation
  - **Services** (cooling, gas system, sensor power supply, FEE power supply, ...)
  - Subdetector **mechanics and integration**
  - **Calibration, alignment and monitoring** strategy and tools
  - **Status and remaining design effort**
    - R&D up to here (and missing, if any); E&D status and outlook
    - Other work needed for design completion
    - Status of maturity (with reference to next slide)
  - **ES&H** (Environmental, Safety & Health) aspects and **QA** (Quality Assessment) planning
  - **Construction and assembly planning**
  - **Collaborators** (=Institutions) and their role, resources and workforce
  - **Risks and mitigation strategy**

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