

EICSC project R&D proposals

Nikki Apadula

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LBNL RNC EIC Meeting

General info

- CD2/3A is back on track for mid 2024
- We've lost a year in R&D progress (we still don't have money)
- FY23 proposals should try to mitigate delays
 - Shorten FY22 milestones, catch up
- [eRD104](#) & [eRD111](#)
 - Report & proposal
- [eRD113](#)
 - New proposal on sensor development
- All 3 proposals submitted last week
- [EIC Project R&D DAC meeting Oct 19 - 21](#)

eRD104: Silicon services reduction

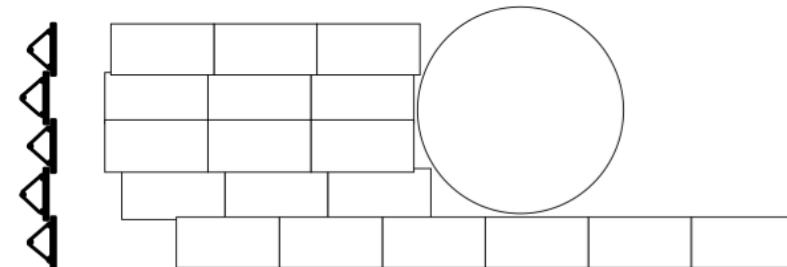
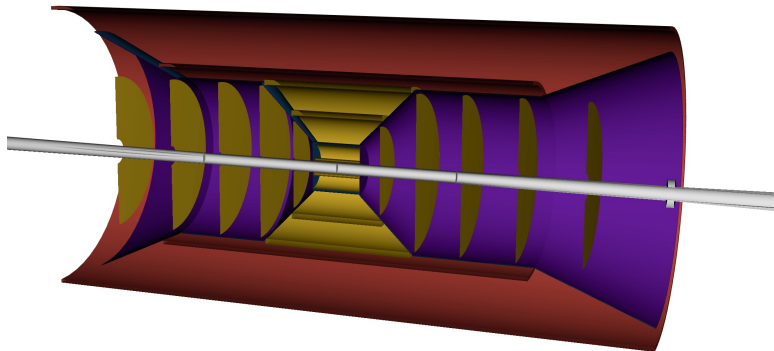
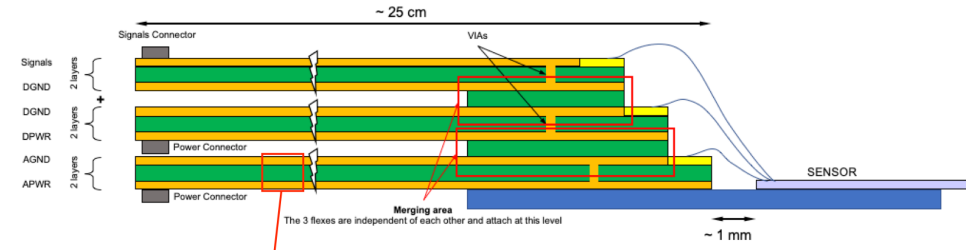
- Powering - Birmingham & RAL
 - Reports on DC-DC converter & serial powering schemes
 - Characterization of regulators based on powering MLR1 structures
- Readout - ORNL & BNL
 - Reports on rad tolerant FPGA multiplexing boards
 - Beam tests for fault testing evaluation boards

eRD111: Silicon tracking (no sensors)

- Modules – INFN, UK
 - Report on optimized sensor dimensions for EPIC based on measured yield of ER1
 - Studies of bending and interconnection
- Barrel & discs – LBNL, LANL, ORNL, UK
- Mechanics, infrastructure, cooling – LBNL, LANL, ORNL

Barrel & discs

- Vertex layers
 - Conceptual design, including possible new support structures
 - Prototype pieces: carbon foam longerons/rings, carbon fiber support for wire bonding near periphery
- Stave & discs
 - Conceptual design – seriously consider stave-like disc design
 - Prototype pieces & (possible) mechanical & thermal tests



Mechanics, infrastructure, cooling

- Updated CAD model of tracker
- Analysis of cooling options
 - Build on summer work for air
 - Add vertex cooling studies - EPIC vertexing is different enough from ITS3 that it should be a separate R&D. Also – beam pipe bake out
 - Add liquid cooling options
 - Particularly important for periphery (900 mW/cm^2 – 4000 mW/cm^2)
- Conceptual designs for detector support structures
 - Prototype pieces with (possible) mechanical & thermal tests

eRD113: Sensor development & characterization

- Sensor development – RAL, BNL, LBNL
- Sensor characterization – INFN, UK, LBNL, ORNL, LANL
- Establish credibility within ALICE ITS3 team
 - Work with & contribute to ITS3 wafer-scale sensor
- Get legal agreements in place between CERN & project
- Characterization of MLR1 & ER1
- Make plans for LAS
 - Understand changing stitching plans, Evaluate specific functionalities for EIC sensors
- Collaborate with eRD111 & 104

LBNL FY23 requests

- eRD111
 - 0.75 FTE engineer, 0.38 FTE tech (brings us to 1 FTE engineer & 0.5 FTE tech when combined with FY22)
 - Money for M&S and a small amount for student support
- eRD113
 - 1 FTE design engineer + travel
 - Plan for designer to spend 6 mo at CERN