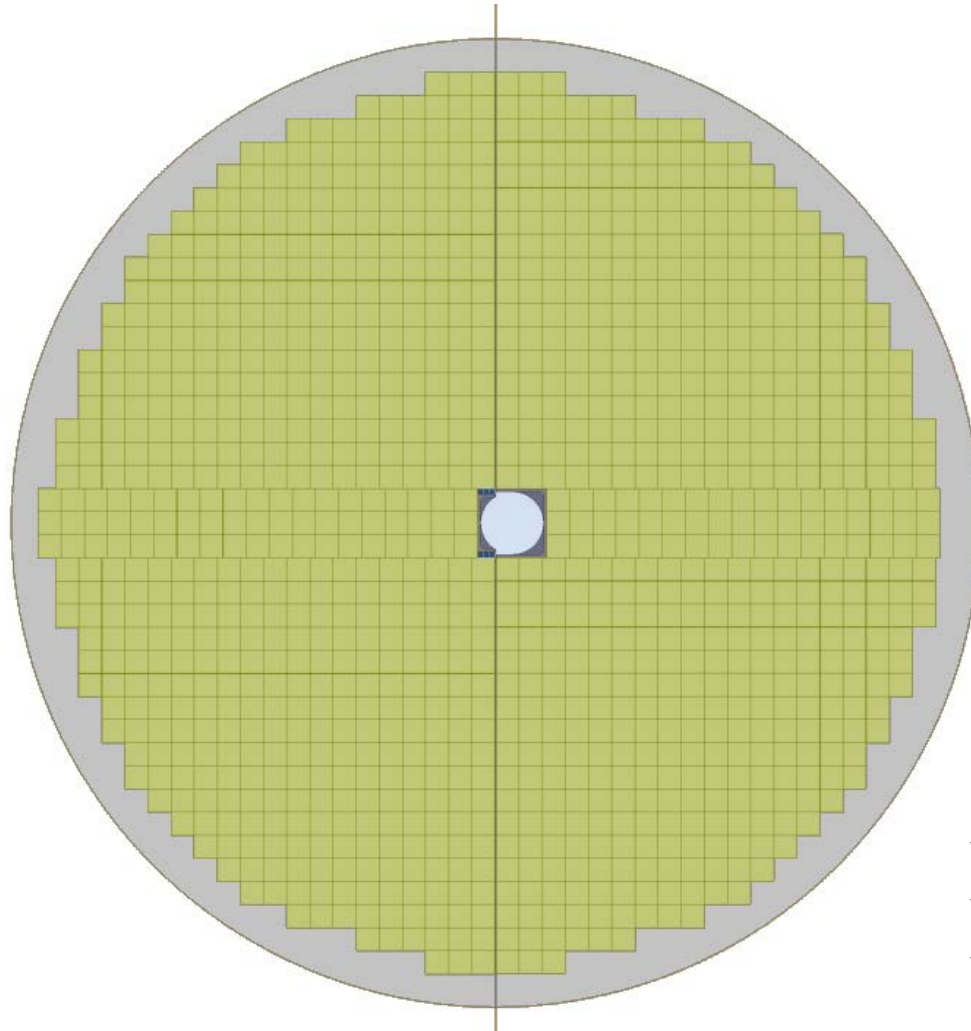


eRD109 COTS Waveform Readout FEB – update Aug 1 2024

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fwd ECAL:

~600 FEB (19,200 ch)

~1180 blocks

~200 unused (no-det) FEB ch

Progress since last report

- Fwd ECAL SiPM board was held up on assembly discussions and cooling improvements; now revised and will be ordered at Cirexx ASAP. (Unfortunately having some non-responsiveness there ☹️... but expected soon.) Prototype assembly at UCLA shop.
- DC/DC converter bench tests and radiation tests
 - LTC3626 performance excellent ~85% eff.
 - proton radiation test on all COTS parts not very promising, $\sim 3 \times 10^{11}$ (1 MeV) n/cm² → remote DC/DC for inner FEB? bPOL48V instead?
 - gamma radiation tests just yesterday (T. Camarda – thanks!) stay tuned for news
 - other FEB parts (opamps, ADC's) need to be tested soon, though some are vetted by STAR FCS use
- Convergence with bwd ECAL group on SiPM choice & SiPM board design
- Data transmission test on 50 foot cable to RDO, satisfactory
- Now resuming the schematic and layout design for forward ECAL FEB
 - Main items remaining: bias, FPGA, power supplies
- A 2 channel hand-assembleable analog prototype to use with the Polarfire evaluation board is under design in parallel; layout based on real FEB where possible
 - This will be built and tested first, and potentially used for bwd ECAL beamtest
 - Also to serve a test article for radiation tests on opamps & ADC, with test I/O to isolate components for test

