UCLA Plan on EIC Calorimeter Development

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Outline

1, Status of the Hadron Endcap Calorimeter System

2, pECal R&D plan

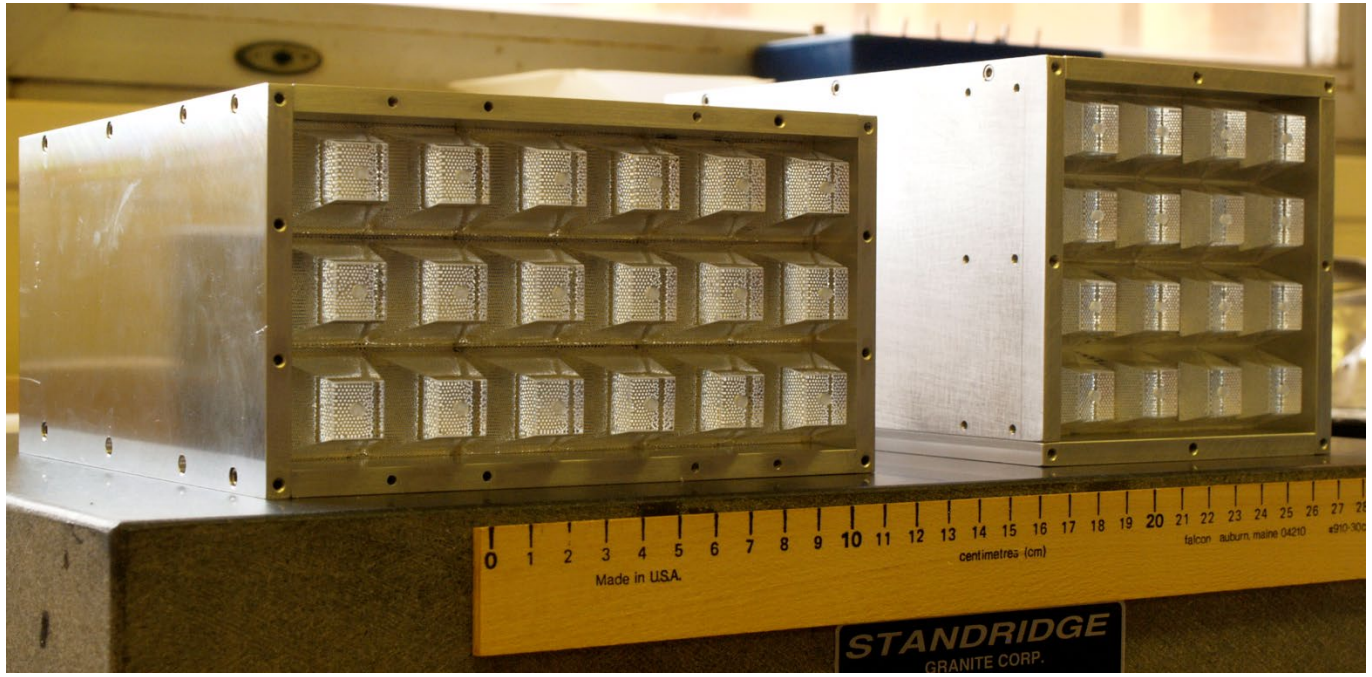
3, pECal performance simulations and design optimization (Zhongling Ji)

4, Work with UCR on Calorimeter Insert Section

5, Physics simulations

Detector 1 Hadron Endcap Calorimeter System

The pECal detector will use the ATHENA W/SiFi SPACAL technology



SPACAl and 1D,
FNAL 2014

SiPM Readout

Detector construction and performance reasonably well understood

A team of EIC groups including those involved in sPHENIX W/SiFi construction are committed to build the EIC pECal

pECal R&D Plan

After initial discussions with ORNL most likely scenario is:

- **FY2023 – construction and test of 64 Channel ECal with improved light collection scheme.**
- **FY2025 – joint test run with HCal**

This scenario depends on the scope of R&D related to the readout.

- **In principle, three years should be sufficient to design and produce first version of final readout for ECal, however such funding is unlikely.**
- **Final design for readout not needed until much later date (2027/2028).**
- **Staging approach is possible, i.e. FEE in FY 2023, ADCs – 2024, DAQ Interface – 2025 or much later.**
- **It will be a discussion with the project week of July 18-22 (and with ORNL after that), what will be the scope for readout development for FY23-FY25, who will lead what efforts etc.**
- **Once R&D scope for readout will be clarified a revised R&D proposal will be submitted to project R&D managers.**

pECal Performance Simulations and Design Optimization

We have done many simulations on the W/SiFi performances over the years.
(Maria Sergeeva, Zhiwan Xu, Ryan Milton, Zhongling Ji)

We plan to finalize the simulation and publish the simulation results.
See Zhongling's talk

Work with UCR on the Calorimeter Insert Section

The UCR team has a nice proposal to develop a design for Calorimeter Insert Section.

The UCLA group will work the UCR group on hardware design, R&D, beam testing etc.

EIC Physics Simulations in the Hadron Endcap Region

We tried to start the jet physics simulations with help from Miguel.

Then we were distracted with the EIC Athena calorimeter work.

We will implement the pECal design in the DD4HEP framework and validate the simulation of pECal.

The pHCal may take more time to finalize.
HCal responses will need to be validated with prototype detector and beam testing.