

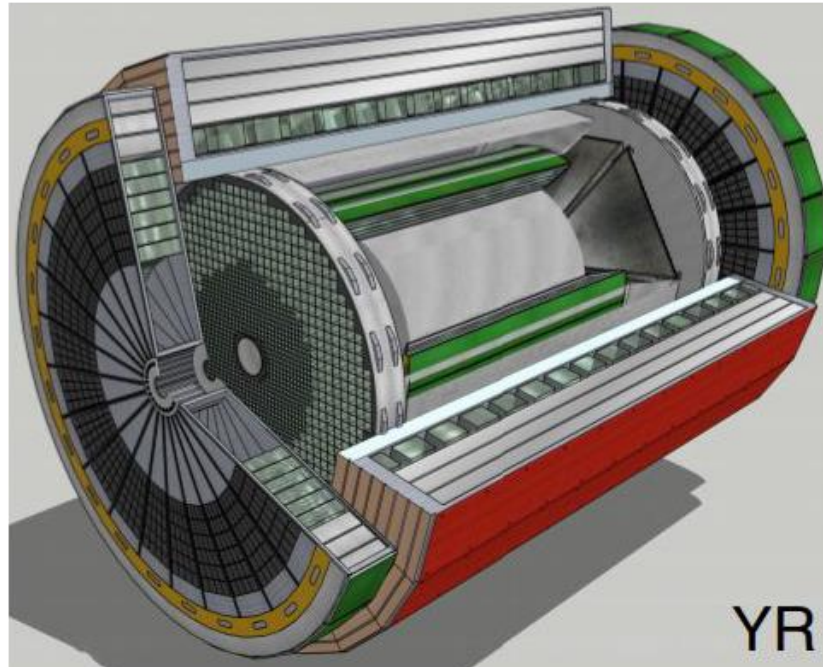
# EEEMCal – Mechanical Design projects

How to support the EEEMCal modules?

How to include light monitoring systems, cooling systems for crystals, etc.?

What is the impact of additional material on the EEEMCal resolution?

What is the magnetic field at the location of the EEEMCal?



How to mount the EEEMCal?

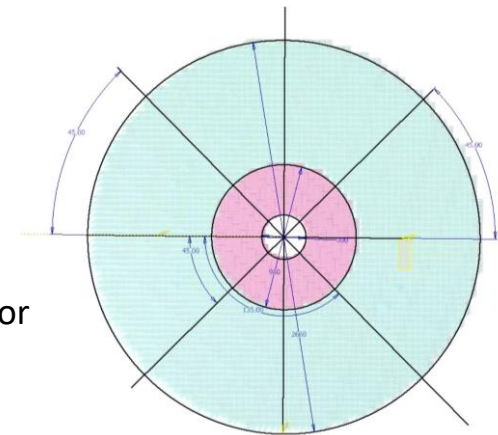
- Part of HCal frame?
- Hanging from top?

How to split open the detector for servicing?

IJCLab-Orsay?

MIT?

Initial studies show that EEEMCal radiator weight is ~10 tons



# EEEMCaI – Electronics/Readout projects

## SiPM Preamp+shaping development

- Specifications for FE (ASIC, PCB, ...)
- FEP (FPGA. PCB. Interconnects, ..)
- System Specifics (Data Format, Configurations, Control Interface, ...)

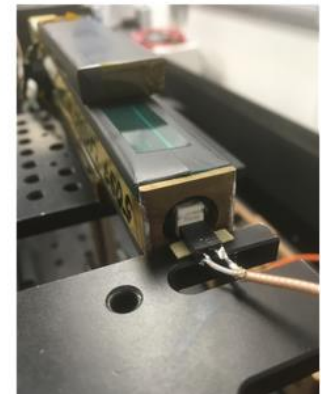
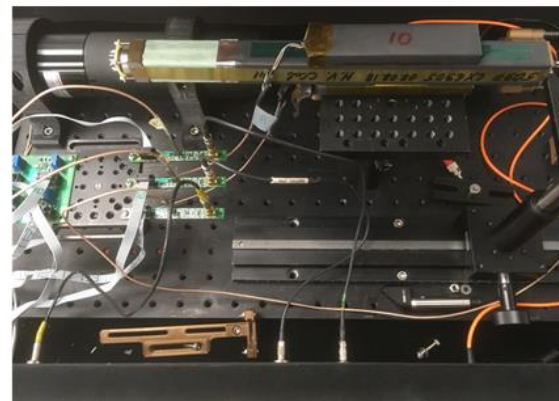
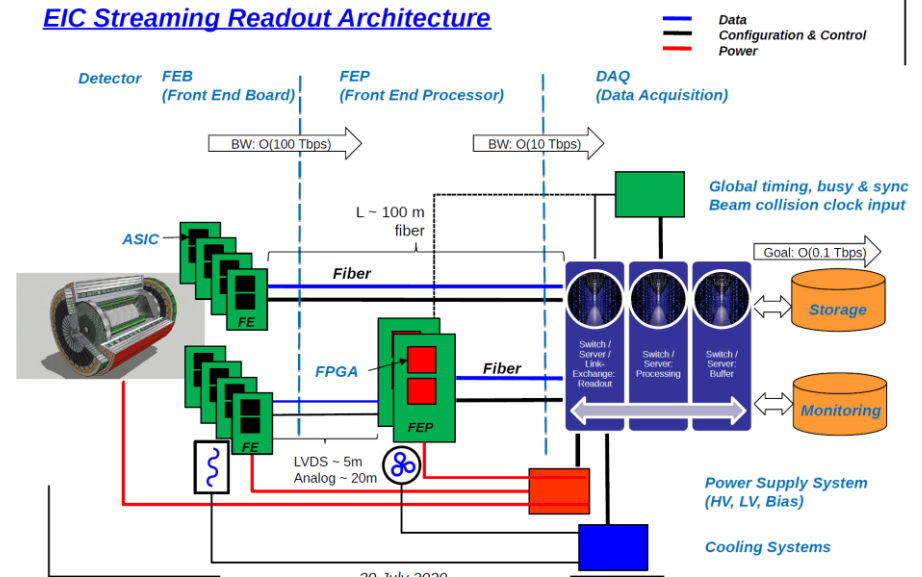
## SiPM development of large matrix

## SiPM boards characterization

## Prototype tests

- Light collection efficiency/saturation
- Noise monitoring
- Radiation damage
- Readout with multiple SiPMs/block
- .....

## EIC Streaming Readout Architecture



Charles U.-Prague?

IJCLab-Orsay?

Lehigh U.?

MIT?

# EEEMCal – list of Simulations

## **AANL** Performance and impact on physics, e.g. energy resolution

- Impact of readout choice
- Impact of reflector
- Impact of radiator uniformity (possibly shape)
- Impact of structural support
- Impact of other material around the EEEMCal
- ...

## **CUA** Optimization of material selection

**MIT**

- Design of suitable FOM in GEANT4
- Artificial Intelligence
- ....

**U. Kentucky?**

**IJCLab-Orsay?**

**Lehigh U.?**

**FIU?**

**MIT?**

**Charles U.-Prague?**

# EEEMCal – list of Prototype Tests

U. Kentucky?

Lehigh U.?

FIU?

## Energy resolution

MIT

- PWO 3x3, 5x5 - ongoing

CUA

- SciGlass 3x3, 5x5 - ongoing

AANL

## Cooling, LMS, etc.

## SiPM vs. PMT

- Light collection efficiency
- Monitoring/cooling, etc.

IJCLab-Orsay?

## Streaming Readout

# EEEMCal – list of radiator projects

IJCLab-Orsay?

Charles U.-Prague?

## Fabrication/refurbishment

- CUA
  - SciGlass
- AANL
  - Lead Glass
  - PWO

## Radiator Characterization

- Visual inspection
- Transmittance
- Light Yield/Scintillation kinetics
- Radiation hardness