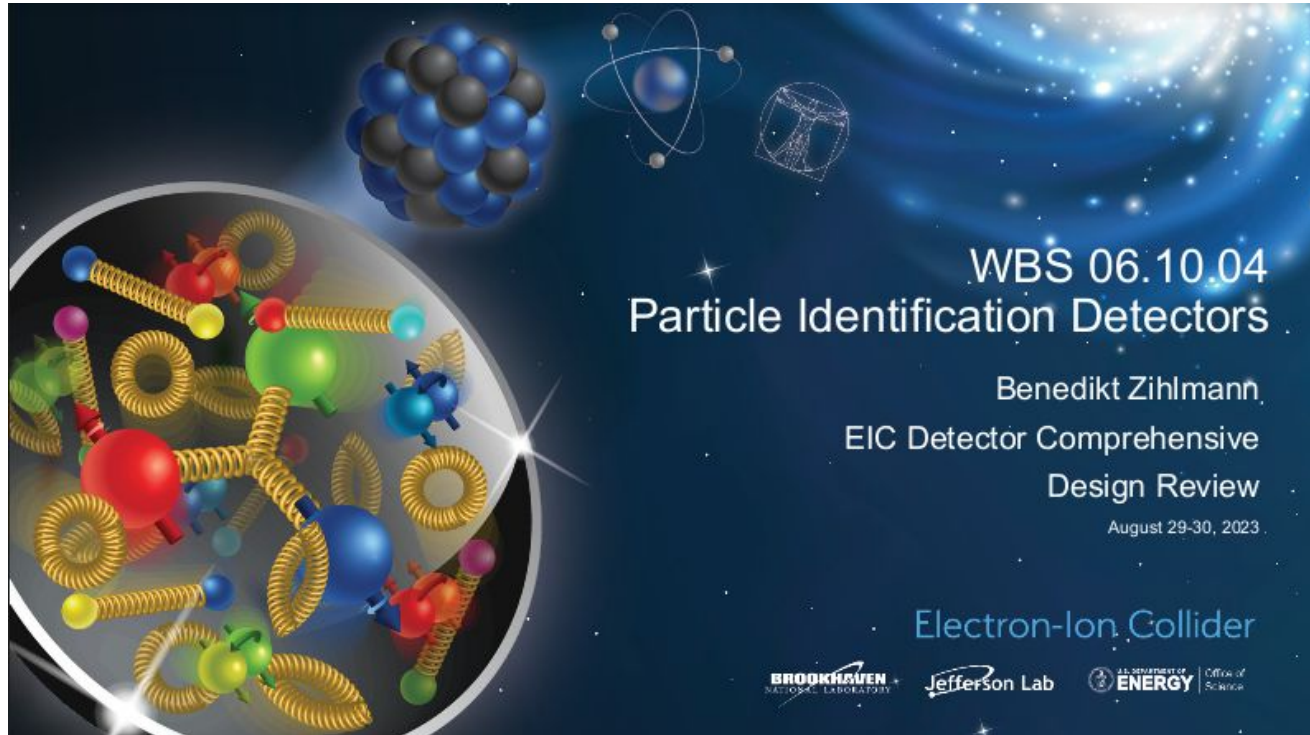


Some Questions from the DAQ Group

Tonko Ljubicic/BNL
TOF Meeting, 12-Sep-2023

DAQ Group is confused with numbers shown in the presentation below:



TOF counts of channels & RDOs are different in this presentation than what we showed previously.

⇒ DAQ Group has contacted me to clarify.

TOF Slide, Page #19

Charge #2

TOF technology

AC-LGAD Sensors (similar to CMS endcap timing layer)

- **Barrel: Strip Sensor $3.2 \times 4 \text{ cm}^2$ (2 ASICs)**
 - 1 module with 64 strip sensors (16384 channels)
 - 144 modules: overall 2359296 channels
- **Endcap: Pixel Sensor 1024 channels**
 - 1 board 25 sensors (24576 channels)
 - 212 boards: overall 5210112 channels
- **Significant cooling requirements**
 - Barrel 4kW
 - Endcap: 13kW
- **Carbon fiber support structure with integrated cooling**
 - Design evaluations ongoing
 - $\frac{1}{4}$ barrel demonstration prototype
 - Stave carbon fiber structure to support sensors
 - FEA of structure and cooling system planned

Barrel: 1 module (stave?) should only have 32 sensors (64x128ch ASICs). There should be 288 modules (aka RDOs) for readout on both sides. **Isn't this the plan??**

Endcap: 1 board (RDO?) has different number of sensors, from 24-48 (average 41), so the total number of channels is not 5.2M but is 8.9M like always. **(Where does the number "25 sensors" come from??)**

More Questions from Jeff (DAQ Group)

1) It seems like the RDO for the endcap are mounted in place near the FEBs. Is that true?

Yes. The sensor+ASIC packages (we don't call it a "FEB") are ~beneath the RDO and will be joined by connector-to-connector technology (no cables).

2) Is the space allocated for them or are there any drawings? Also for the barrel, are there locations specified?

Don't know.