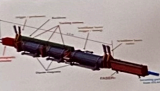


Simulation of a new preshower for the FASER experiment at the LHC

FASER Experiment

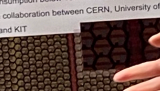
The FASER experiment is precisely aligned away from the collision point. Long Lived Particles (LLPs) decaying into photons are advected to the undiscovered hidden sector. Measurement of LLPs decaying into two photons or CP-odd scalars, extending the



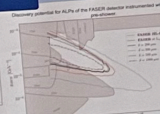
The Monolithic pixels in SiGe BiCMOS

Description:

- Monolithic ASIC in 130nm SiGe BiCMOS from IHP microelectronics.
- The ASICs will have hexagonal pixels of 65 μm side and an active area 23.5 x 15.0 mm².
- Local analog memories are used to store the charge.
- Ultra fast readout with no digital memory on-chip to minimize the dead area.
- Cluster time resolution of 200 ps.
- Power consumption below 150 mW/cm².
- Design in collaboration between CERN, University of Geneva and KIT



Simulation Results



CMS HCAL Run II Communication Loss and VTRx Studies

Grace E. Cummings on behalf of the CMS Collaboration

CMS HCAL Phase I

The Compact Muon Solenoid Experiment Hadron Calorimeter (CMS HCAL) has four parts:

- HCAL Barrel (HB)
- HCAL Endcap (HE)
- HCAL Forward (HF)
- HCAL Castor (HC)

HB and HE... HB and HE... HF... HC...

Diagnosing the Drift

On the weekend, the drift was nearly constant, but it had changed the behavior, and had increased the drift. The quantity measured was the drift velocity.

Finally, drift was stopped in a 4-week period.

What causes the drift with the VTRx? Here are some ideas to test.

Hints within HCAL

HE... HB... HF... HC...

Solution and Understanding

Identify the root cause of the drift... Each property of the existing test was tested to trace which aspect of the drift was affected.

- 1) Coating
- 2) Preheating
- 3) Densification

The Problem

In 2018 data taking, one 20% of the HCAL communication loss was observed. Communication was restored by switching to a redundant connection.

In a 2019 communication period, another aspect of the original HC test communication.

In both periods of communication loss, the only symptom prior to the loss was observed drift in the Precision Timing Strength Indicator (PTSI) system. Upon signal acquisition, 40% of the HC communication loss experiment was able to identify communication loss in the HC test communication.

With the addition of a current meter with the PTSI data, it was found that the 20% communication loss was not observed in the HC test communication. This led to the discovery of communication loss in the HC test communication, and a bug in the software that was not observed in the communication loss.

Conclusions

Investigation was able to identify the problem, and the root cause of the drift was identified as the drift velocity. The drift velocity was measured in the HC test communication, and it was found that the drift velocity was not observed in the HC test communication. This led to the discovery of communication loss in the HC test communication, and a bug in the software that was not observed in the communication loss.

Biion Contact



CMOS Readout

High-Z Absorber (e.g. GdAu)

Biion Contact

