Forward Pixel Port Card Status

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- Port Card functions
- Block diagram

  See: www.physics.rutgers.edu/hex/cms

- Issues:
  - Mechanical Orientation
  - Costs
  - Material budget
  -

$\boxed{\text{Port Card Functions}}$

Overview

—Pipe data into fiber transmission to FED

—Slow control of readout chips

—Environment monitoring

—Sensor bias distribution and on/off control

—Clock and trigger distribution to readout chips

Port Card Functions

—Data Pipe

- connection to laser fiber driver
- how many readout chips per laser (4)
- where to locate laser (not on port card ?)
- radiation hardness concerns
- need to control laser threshold

—Slow Control (CCU)

- set thresholds
- enable / disable
- reset
- calibrate
- trigger delay
- write to DAC's

—Clock and Trigger (PLL)

- send clock
- send L1 trigger
- adjusts delay

—Monitoring (DCU)

- temperature
- bias voltage
- bias current
- low voltage
- radiation damage

\- some hard-wired lines to counting room

—Bias voltage and low voltage

- 3 bias voltages per blade
- corresponds to 3 ranges of rϕ

Issues

—Decision of orientation of PC to plane $\perp$ to beam

- increased radiation dose
- multiple scattering
- cooling

—Physical size of port card: $\approx$ 2x4 cm^2 minimum

- CCU $\approx$ 1.5x1.5 cm^2
- DCU $\approx$ 0.8x0.8 cm^2
- PLL $\approx$ 0.4x0.4 cm^2
- Fiber Laser 1.4x1.0 cm^2

—Copper lines for temp. and radiation monitoring

—Line drivers for HDI

—Digital vs analog on fiber to FED

—How many port cards per blade?

- 45 readout chips per blade (21 side A, 24 side B)
- CCU can handle 128 readout chips
- Originally 2 PCs / blade; possibly 0.5 PC / blade