Ohio State Plan on IBL Opto-Link

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Opto-boards

- Design, testing, and production of opto-boards
  - November 09: testing of an opto-board:
    - use existing BeO board, VDCs, and DORICs
    - 7 working channels
    - AOC 10 Gb/s VCSEL array
    - Optowell PIN array
    - receive/transmit LVDS over 6 m of skinny wires
  - 2010: first prototype opto-board?
  - 2011: irradiation of opto-boards?
  - 2012: production?

VCSEL/PIN Irradiation

- VCSEL:
  - proposed candidate: AOC 10 Gb/s
    - plan was to irradiate 20 arrays in August
    - manufacturer encountered lifetime issue
    - can only irradiate ~7 arrays in August
    - lifetime study at elevated temperature after irradiation
    - need to repeat irradiation in October or next year
- PIN:
  - proposed candidate: Optowell PIN array
    - plan to irradiate 20 arrays in August
    - lifetime study at elevated temperature after irradiation

RX?

- RX installed in current pixel detector has two problems
  - DRX has limited dynamic range
  - PIN array has a slow tail
    - some links are difficult to operate due to optical power spread
    - designed new RX with commercial chip and Optowell PIN array
    - if prototype boards are successful, replace some/all current RXs
    - no plan to be involved in building RXs for IBL

Redundancy???

- Should we develop redundancy?
  - advantage: build a more robust opto-links:
    - implement redundancy to bypass broken PIN/VCSEL
    - individual control of VCSEL currents
  - disadvantage:
    - add cost: ~$54K for chip production
    - require modest development effort