Calibration Analysis Software for the ATLAS Pixel Detector

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After the IBL insertion…

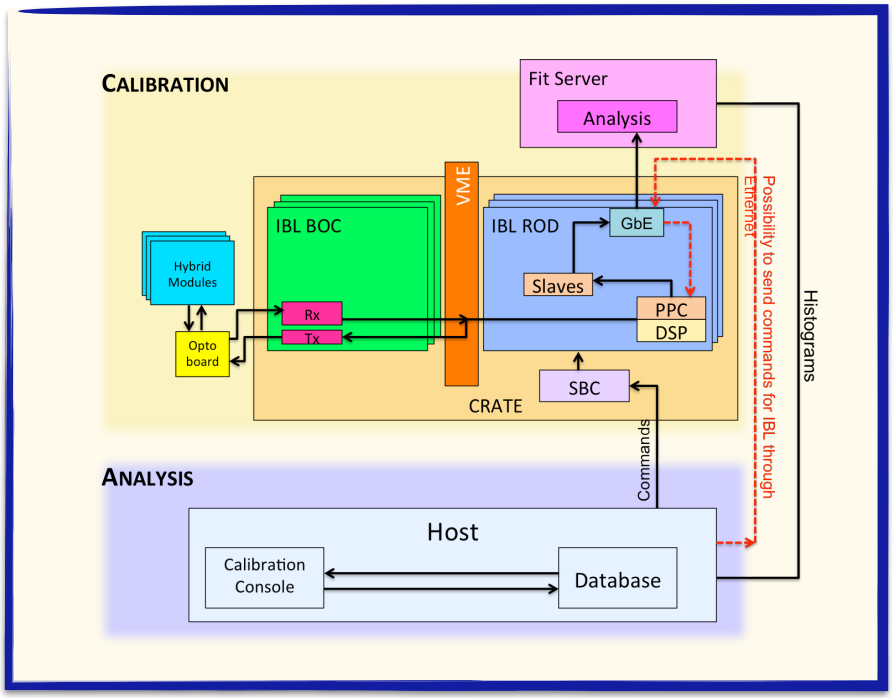
…and after the replacement of the Service Quarter Panels

The detector needs to be calibrated

- Read-out links
- Pixel Front-Ends (FEs) response

The Calibration

- Handle more and new FEs with different characteristics
- Performed through the read-out infrastructure
  - New generation hardware components
  - Introduction of an external Fit-Server



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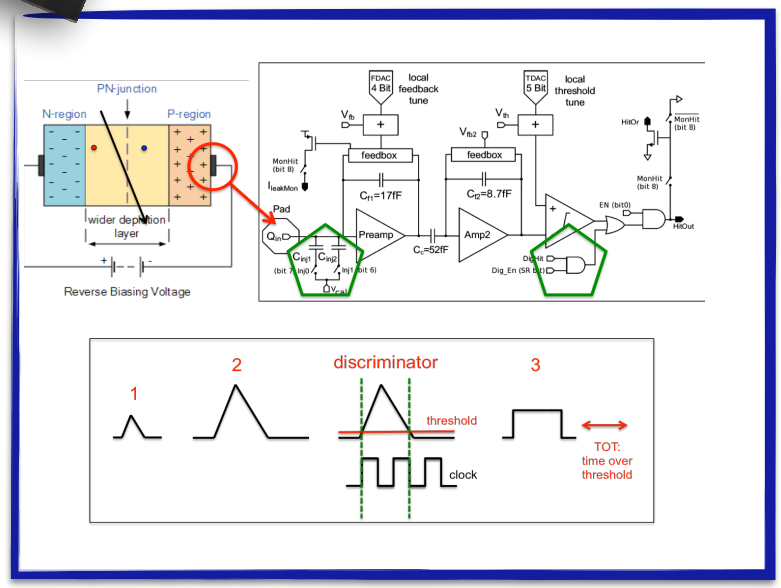

The FEs

- The FEs are the most delicate part of the detector
- Many factors may infect the goodness of the transmitted information
  - Analog signal treatment
  - Digital signal formation
  - Threshold definition to discriminate noise from signals
  - Proportionality of the signal with respect to the injected charge
  - Bump bonds state
- FE registers need to be tuned

The Calibration Analysis

- The results of the Calibration have to be analysed
  - To verify the success of the Calibration tunings
  - To classify the FEs and the pixels status
  - To exclude noisy pixels from the data taking

On the right the results of the analysis after testing the analog signal treatment of the pixels on one stave.