DATCON ROI on DESY Testbeam

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DESY Testbeam Setup



- One PXD half ladder and four layers of the SVD in the suggested distance as in the final design
- Electron beam with variable energies from 2 6 GeV and up to 1 Tesla magnet field
- Full DAQ chain with event builder and data reduction system
- Using DATCON Helix track parameter spy data

Simple Flow Diagram



Accumulated Tracks (20k) from DESY Testbeam



Accumulated Tracks (20k) from DESY Testbeam



ROI Performance

- Hough transformation with SVD tracking only
- Extrapolation to PXD plane with fixed ROI size (16x16 px)
- Two errors were found in the ROI creation FSM:
 - Extrapolated coordinates outside the PXD active area were in rare cases still used for ROI creation corrected at DESY
 - Second pixel ID can be higher than first, caused by buffer overflow in one register
 - Offline corrected: By apply special treatment to these cases

Accumulated ROIs from DESY Testbeam

DATCON ROI Full Map



Accumulated ROIs from DESY Testbeam

DATCON ROI Full Map



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Summary and Conclusion

- Proof of principle demonstrated during the DESY testbeam: preprocessing pipeline, tracking finding and reconstruction and ROI creation
- Further detailed analysis required: efficiency, purity, data reduction factor
- Still to be confirmed: Dynamic ROI size

Thank you for your attention!