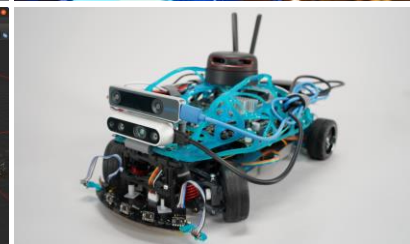
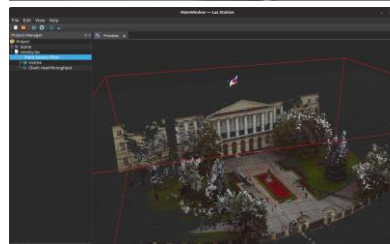




Передовые
инженерные
школы



Industrial Systems for Streaming Data Processing Laboratory

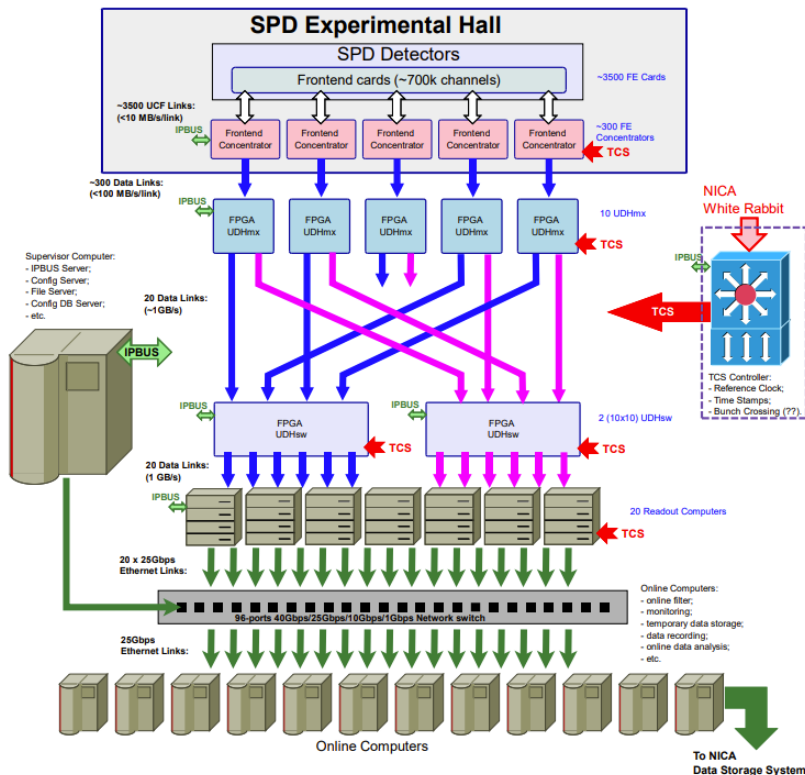


TCS-Controller for drift detectors in SPD test zone

Saint Petersburg
2023

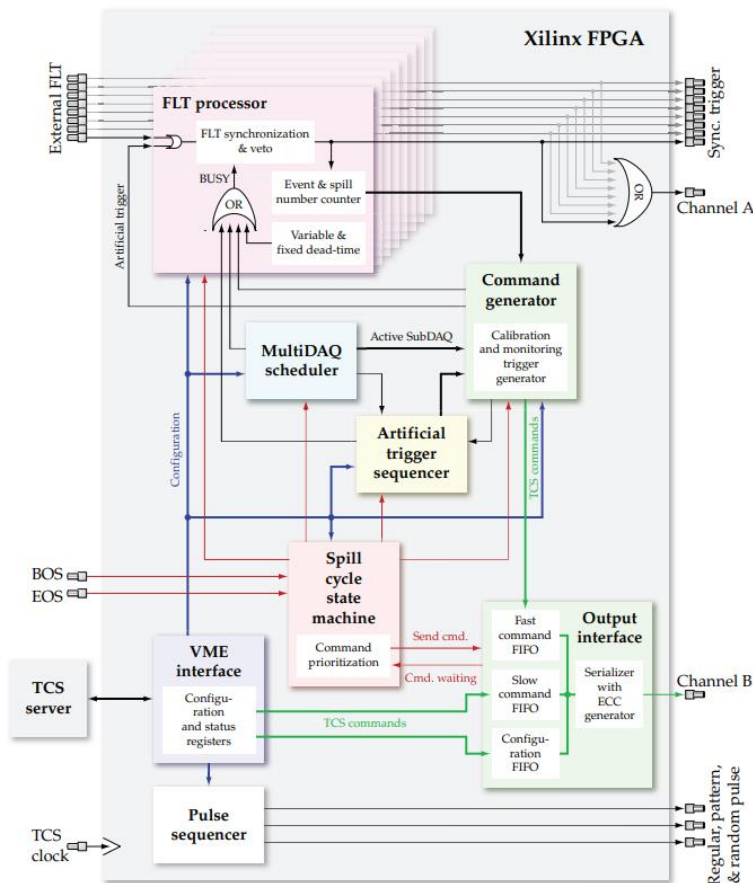
Goals

- Organizing of the full set of equipment compatible with the COMPASS readout to test drift detectors using available electronics while the new front-end electronics and DAQ are designed
- Full compatibility with original TCS
- Configurable internal BOS, EOS, FLT generator
- IPBUS
- Combination of encoder and controller in one device



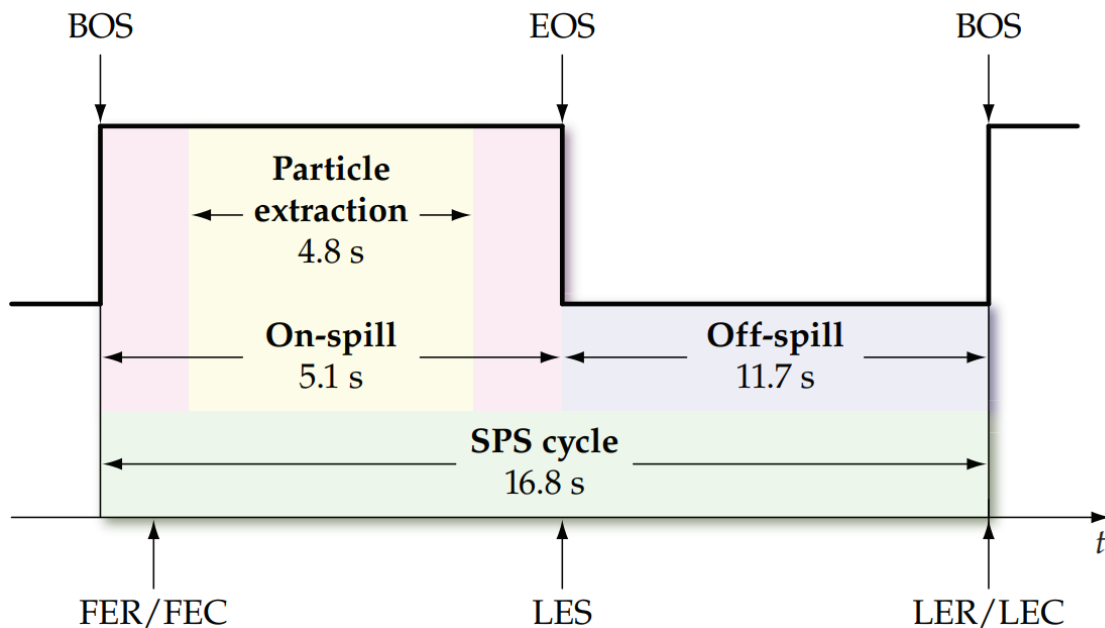
COMPASS TCS Controller

- Fixed and variable deadtime
- **MultiDAQ**
- Slow/Configuration FIFO
- Artificial calibration and monitoring trigger sequencing



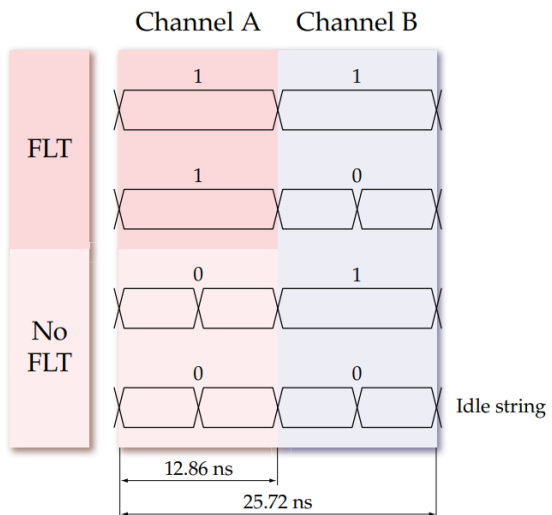
TCS

Spill structure

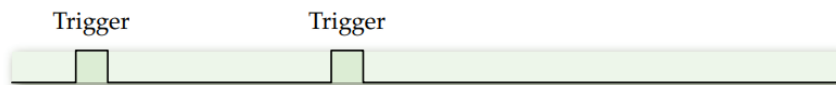


TCS

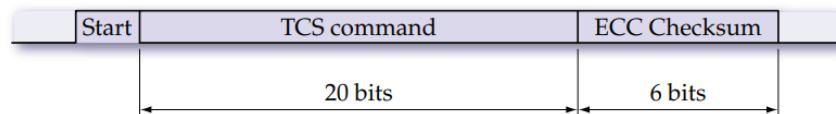
Data encoding



Channel A

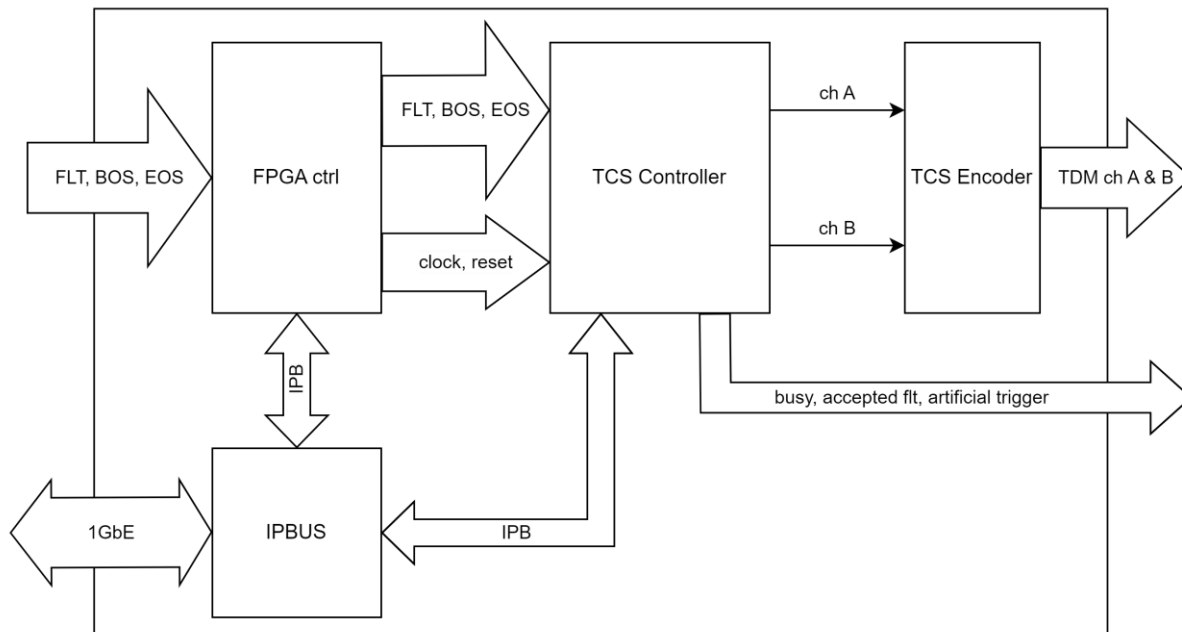


Channel B



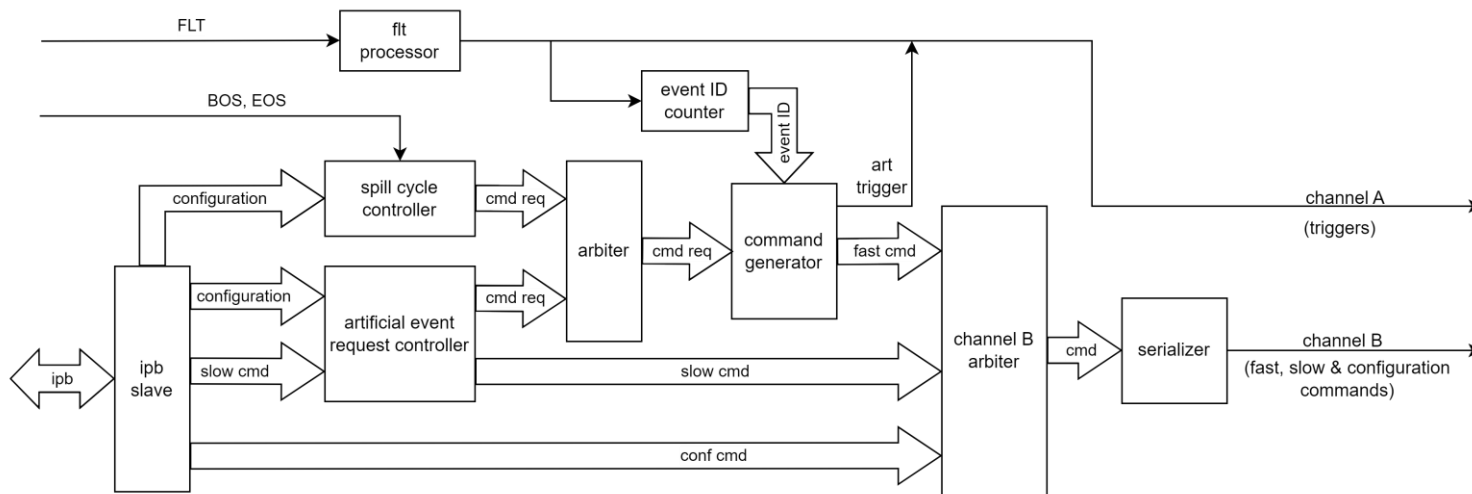
SPD TCS controller

Overview



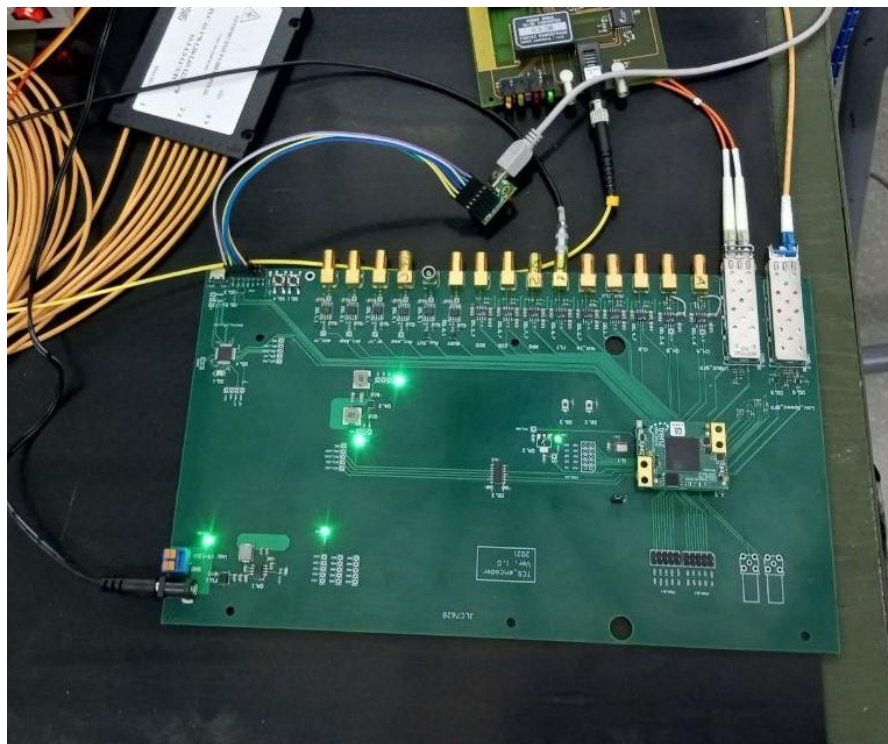
SPD TCS Controller

Channel A&B dataflow



SPD TCS Controller Board

- Xilinx Artix-7 FPGA-based
- IPBUS SFP cage
- Channel A/B SFP cage
- IO ports (BOS, EOS, FLT, BUSY, ART TRG and etc.)



SPD TCS Controller

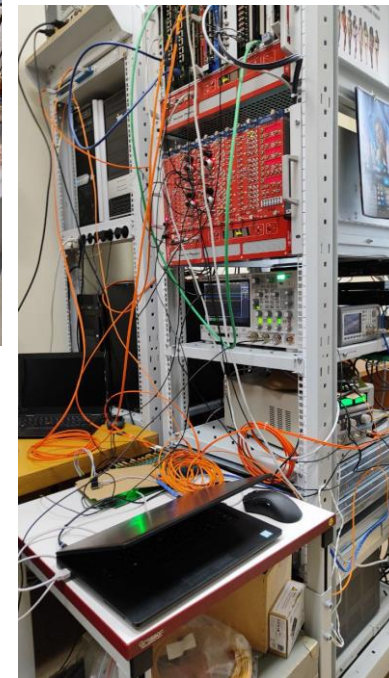
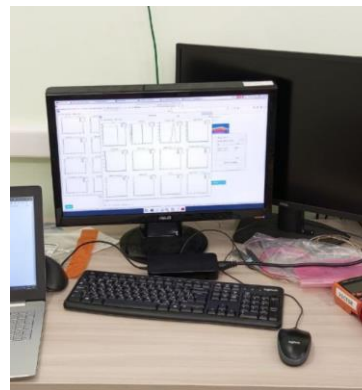
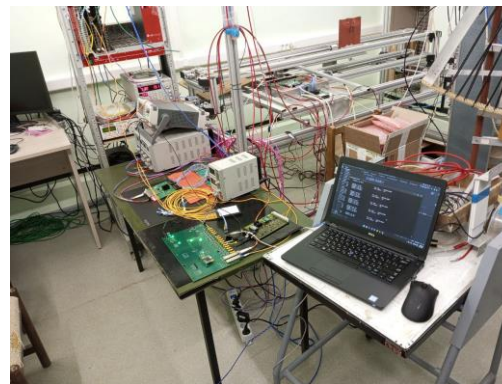
Roadmap: TCS for straw tracker

Previous steps: (Done)

- Schematic and PCB design – TCS Controller + Encoder
- TCS Encoder FPGA design
- TCS Encoder debugging and testing in the real straw tracker experiment environment

Final Steps: (Done)

- Full TCS FPGA design
- Full TCS debugging and testing in the real straw tracker experiment environment
- Testing at CERN



Contacts



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