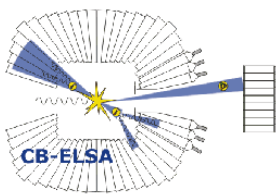
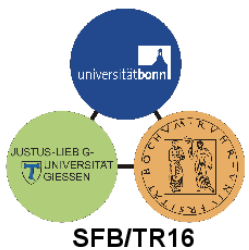
The OLYMPUS experiment

Data Acquisition and Readout Systems

Alexander Winnebeck

Helmholtz-Institut für Strahlen- und Kernphysik der Universität Bonn





Bonn-Cologne Graduate School of Physics and Astronomy

universitätbonn

What is going to be readout?

Listing

- TOF scintillators ($\approx$ 100 x ADC + TDC)
- Drift chambers ($\approx$ 1000 x TDC)
- Luminosity monitors (25 - 30 APV chips)
- Various scaler

How is going to be readout?

TOF and Drift Chambers

- LeCroy FastBUS ADCs and TDCs
- 2 FastBUS crates
- STRUCK FastBUS to VME Sequencer and CPU

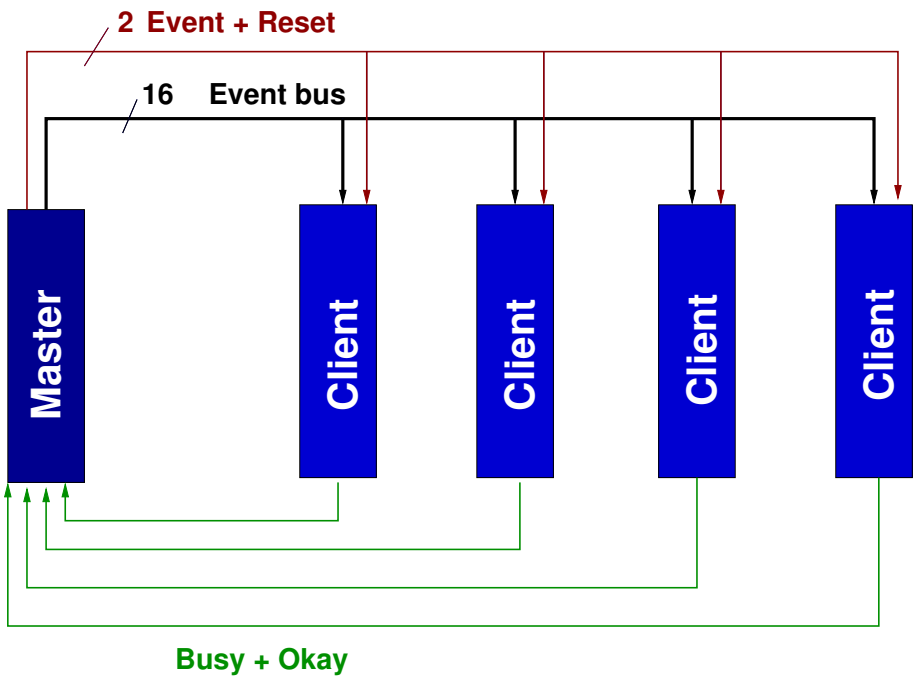
GEMs

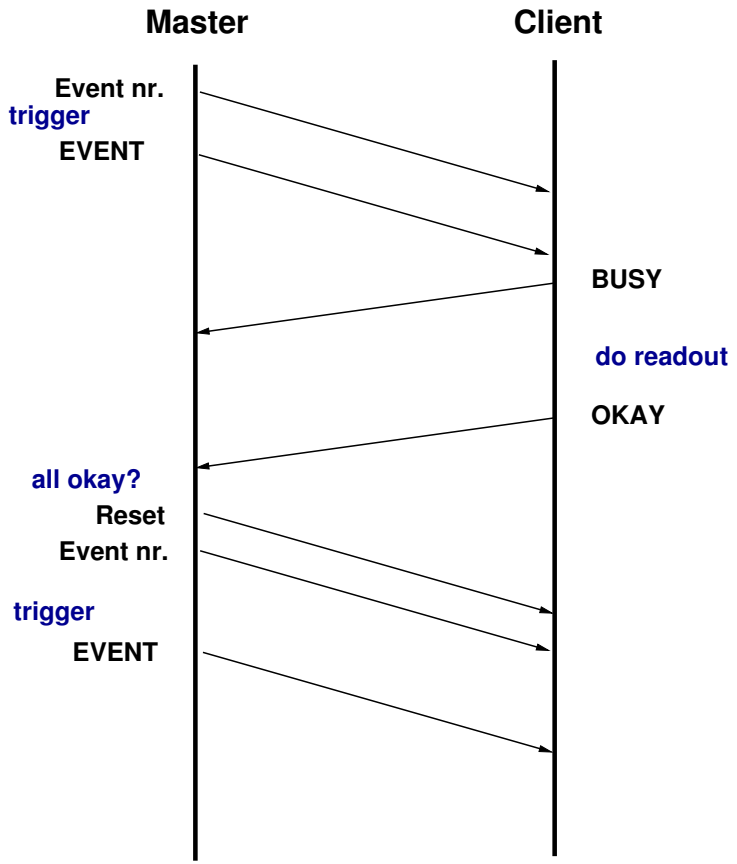
- APV25 front end chips
- VME_FPGA boards with digitizer mezzanine cards
- 6 U VME crate with CPU

Trigger

- VME_FPGA trigger module
- Scalers
- 6 U VME crate with CPU

Synchronization of data





- VME_FPGA boards with specialized mezzanine cards
- 16 bit ECL bus and 4 bit PECL over RJ-45

universitätbonn

Infrastructure and Computing

Control

- 2 fully redundant server
- yp server
- Compiling
- Controlling

1 QuadCore, 8 GB RAM, 2 TB HDD

Saver

- 2 fully redundant server
- Event building
- Compressing
- File serving

2 QuadCores, 8 GB RAM, 16 TB HDD

Additional...

- GBit switch
- Server for online monitoring
- Slowcontrol (?)

universitätbonn

Trigger conditions

Event types

1. TOF^R **AND** TOF^L
2. TOF$^{R/L}$ **AND** LUMI$^{L/R}$
3. LUMI^L **OR** LUMI^R

- Nr. 3 is down scaled.
- LUMI^x means coincidence in all three GEMs.
- Logic gated with DORIS bunch signal.
- Use detector segmentation to reduce back ground.

What additional equipment do we need?

New equipment

- 1 x Sync master
- 4 x Sync client
- 2 x VME crates with CPU
- 1 x Trigger module
- 4 x APV digitizer modules
- $\geq$4 x Server
- Workstation + Monitors...

universitätbonn