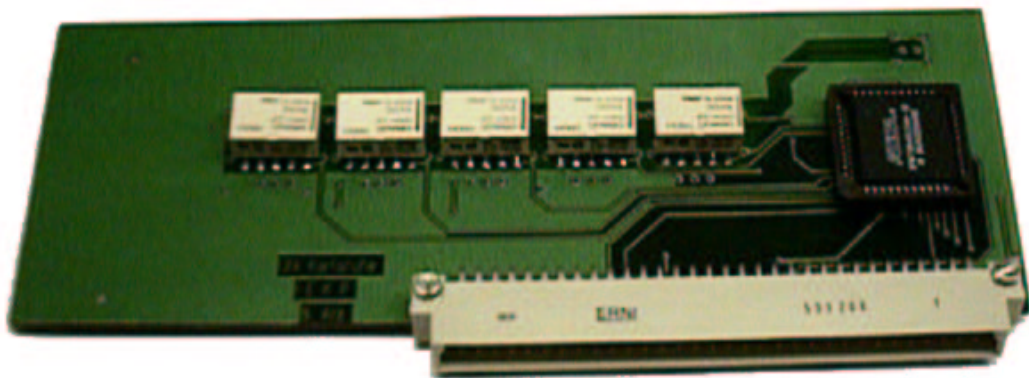


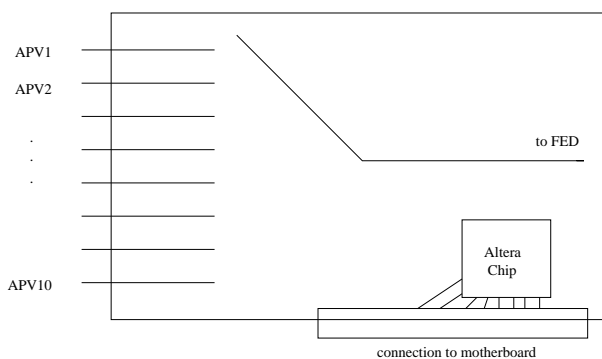
Multiplexer



Bernd Atz, Guido Dirkes, Manuel Fahrer, Stefan Heier,
Wolfgang Schwerdtfeger, Thomas Weiler, Siegfried
Weseler

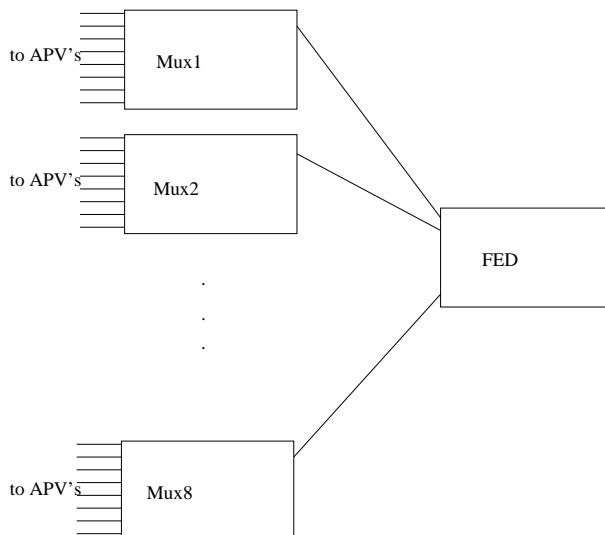
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Universität Karlsruhe (TH)

Scheme of Multiplexer



Scheme of multiplexer, the communication is done via the motherboard, which can be controlled with a digital I/O card or I^2C . One Multiplexer is capable to multiplex 10 APVs to one FED channel.

Connection Scheme of Multiplexer to FED

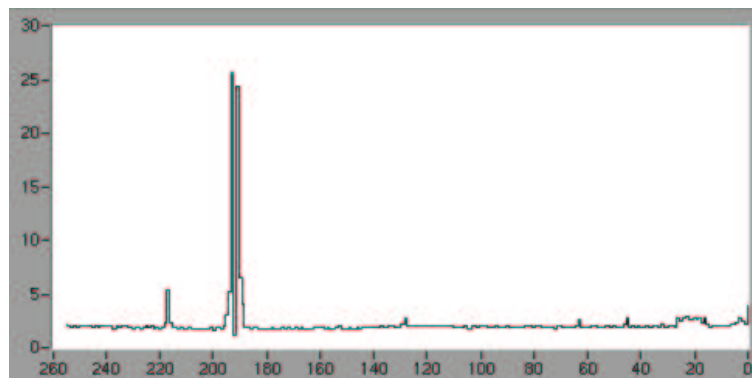


Scheme for connecting eight multiplexer to FED, this makes it possible to read out 80 APVs with one FED.

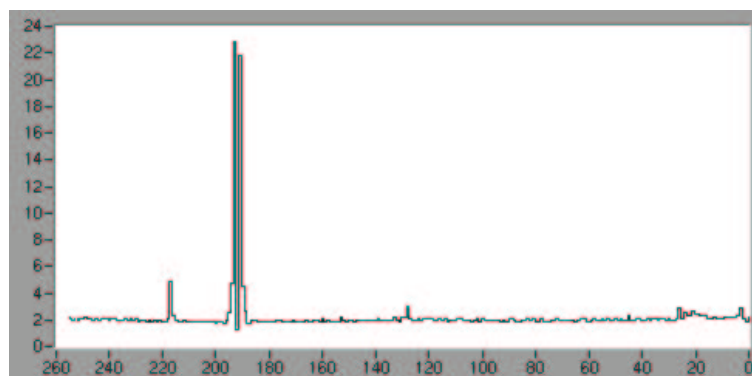
Comparison of Noise

($V_{Bias} = 100 \text{ V}$)

without Multiplexer



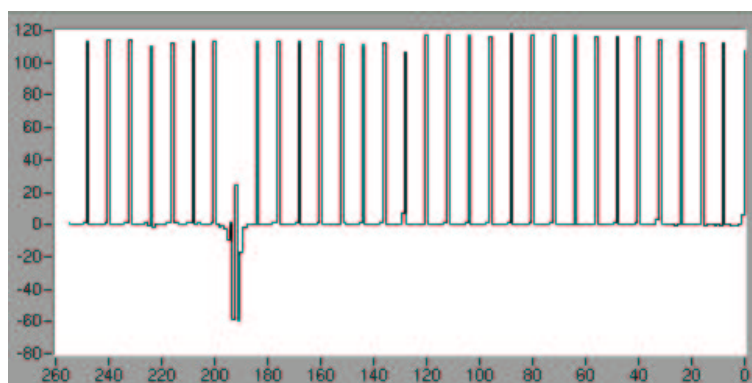
with Multiplexer



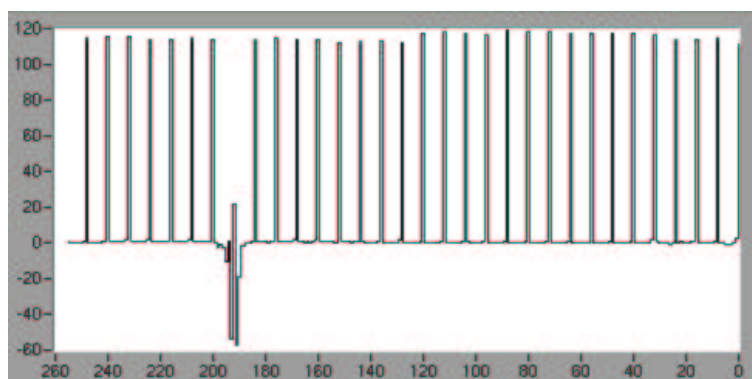
Comparison of Calibration Pulses

($ic_{cal}=222$ $V_{Bias} = 100$ V)

without Multiplexer



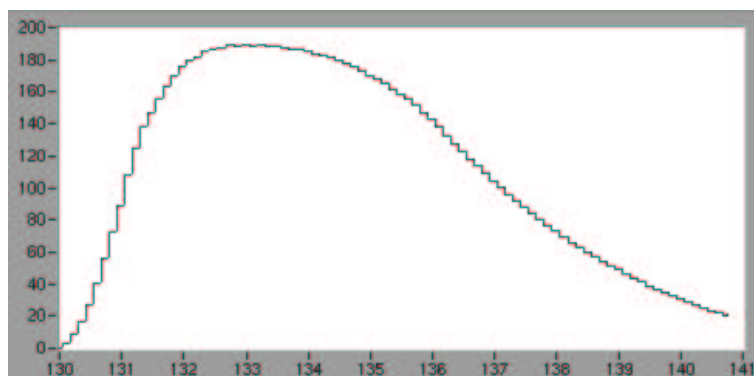
with Multiplexer



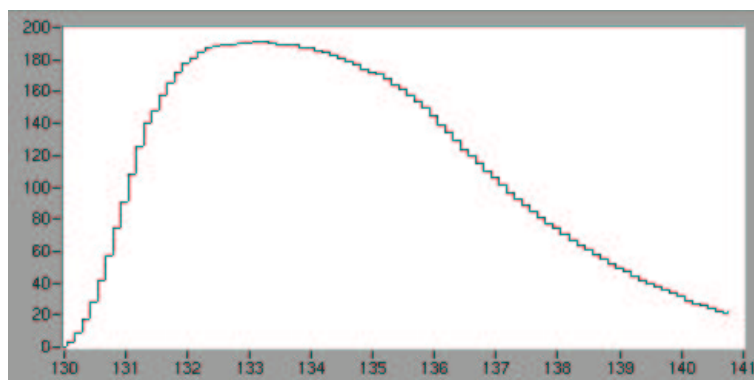
Comparison of Calibration Pulse Shapes

(ical=222 $V_{Bias} = 100 \text{ V}$)

without Multiplexer



with Multiplexer



Summary

All tests done with the Aachen repeater card, APV25 and FED. The module was biased with 100 V and the **ICAL** register was set to **222** (3 MIPS).

- Noise baseline at $\langle 2 \rangle$ for both configurations
- The larger noise of not bonded strips and region (around channel 190) with high noise can be seen on both configurations
- Signal around $\langle 115 \rangle$ for both configurations
- Signal to Noise Ratio $\langle 57.5 \rangle$
- Similar pulse shapes

ToDo List

The results in the summary section are preliminary. Further test have to be done to understand the multiplexer completely. Especially the noise has to be investigated more deeply.

- Light test
- Calibration with a source to determine the signal to noise ratio
- Crosstalk of multiplexer channels
- Test of complete setup (several multiplexers)