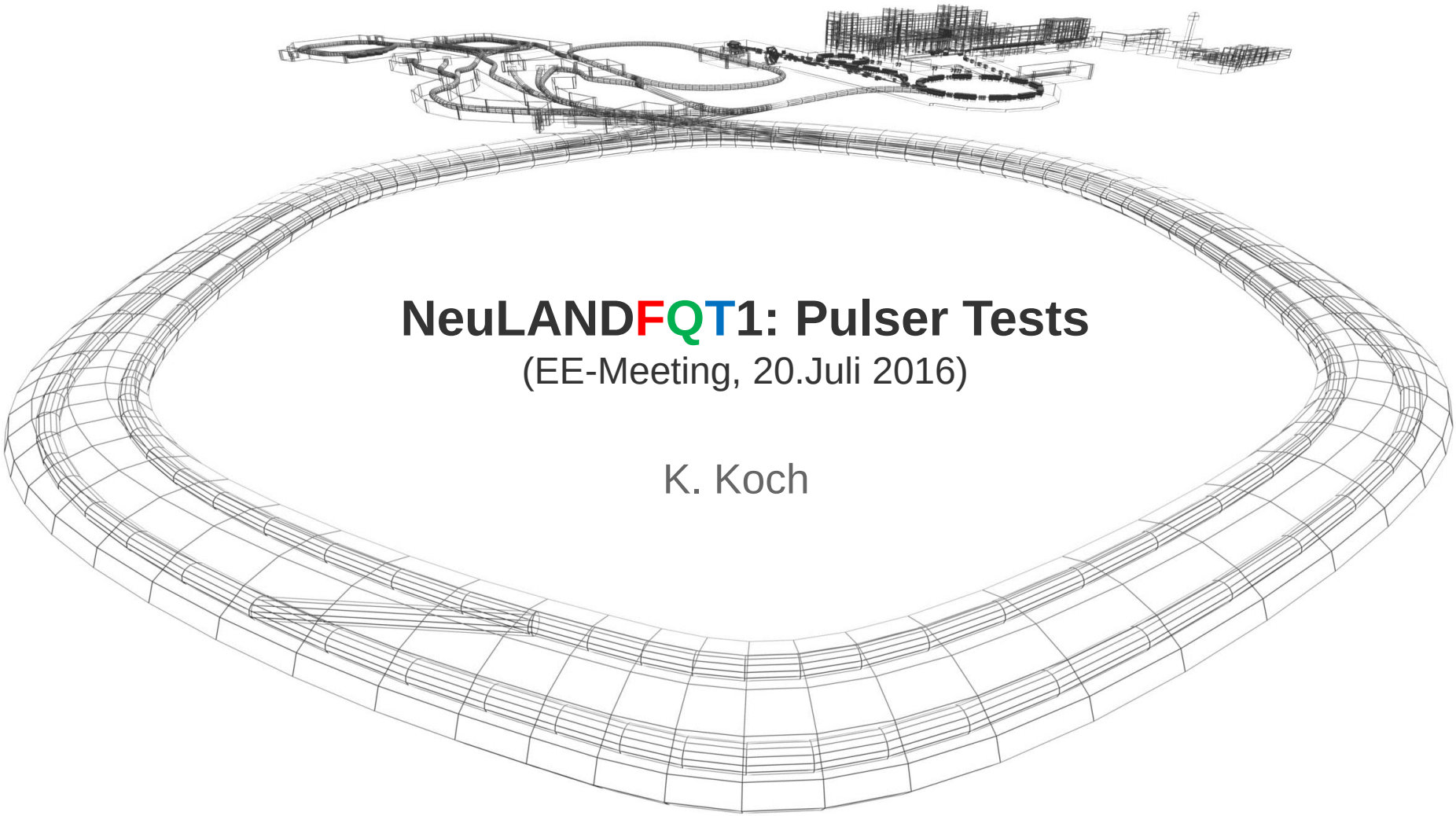


NeuLANDFQT1: Pulser Tests

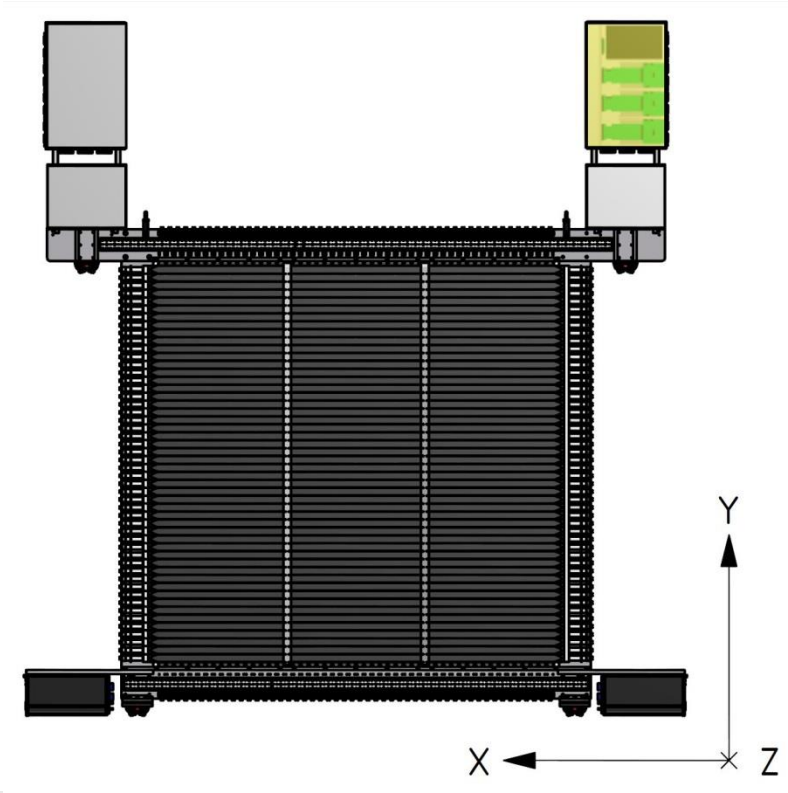
(EE-Meeting, 20.Juli 2016)

K. Koch

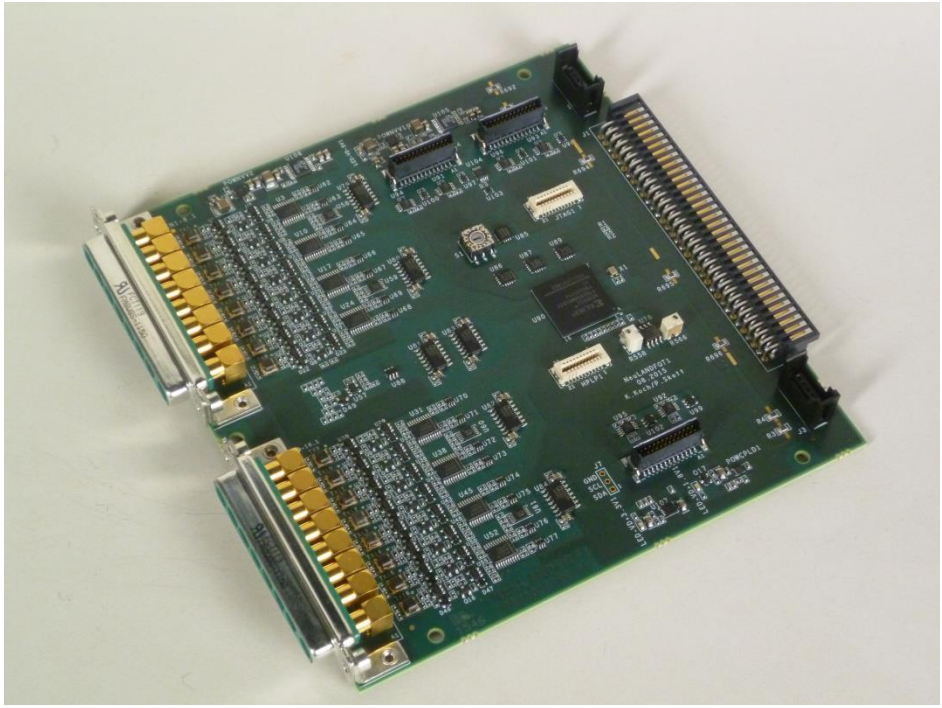
NeuLAND electronics - overview

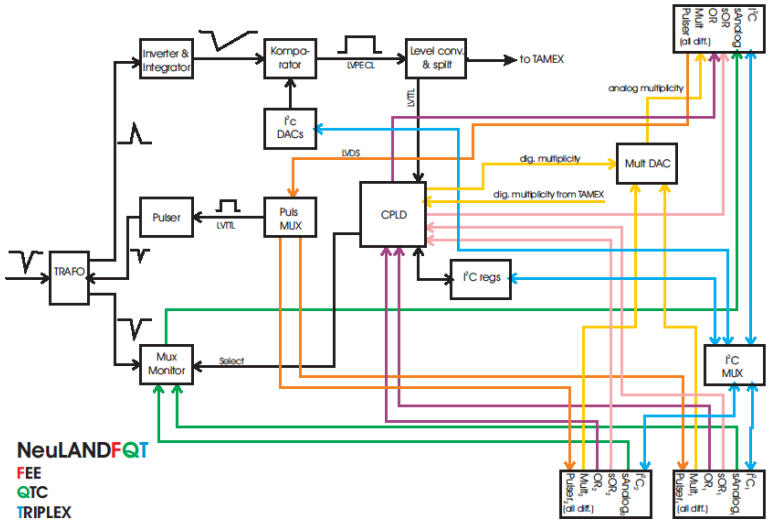
Fully functional stand-alone double planes:

- 200 electronic channels
- 6+7=13 Tamex cards
- 1 FQT interface (Raspberry pi+HADCON)



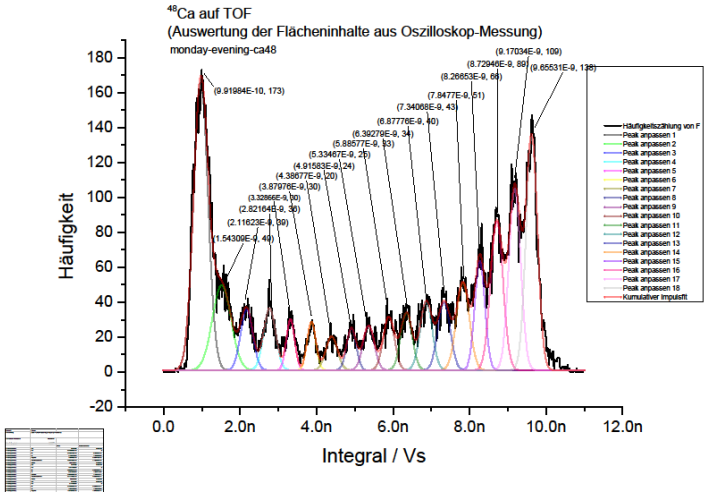
NeuLANDFQT1





- merge of LANDFEE, QTC and TRIPLEX
- new pulser with analog coupling via transformer
- multiplicity per card from FPGA via DAC to Triplex tree
- single channel monitoring (analog and digital)
- no analog sum

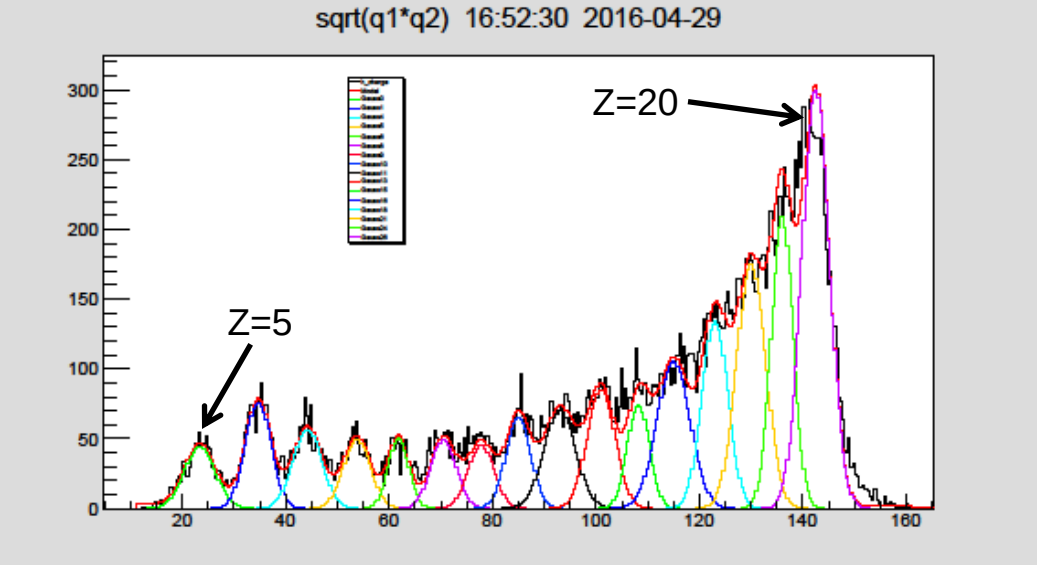
Test of NeuLANDFQT1 (with AWG pulses)



mathematical analysis

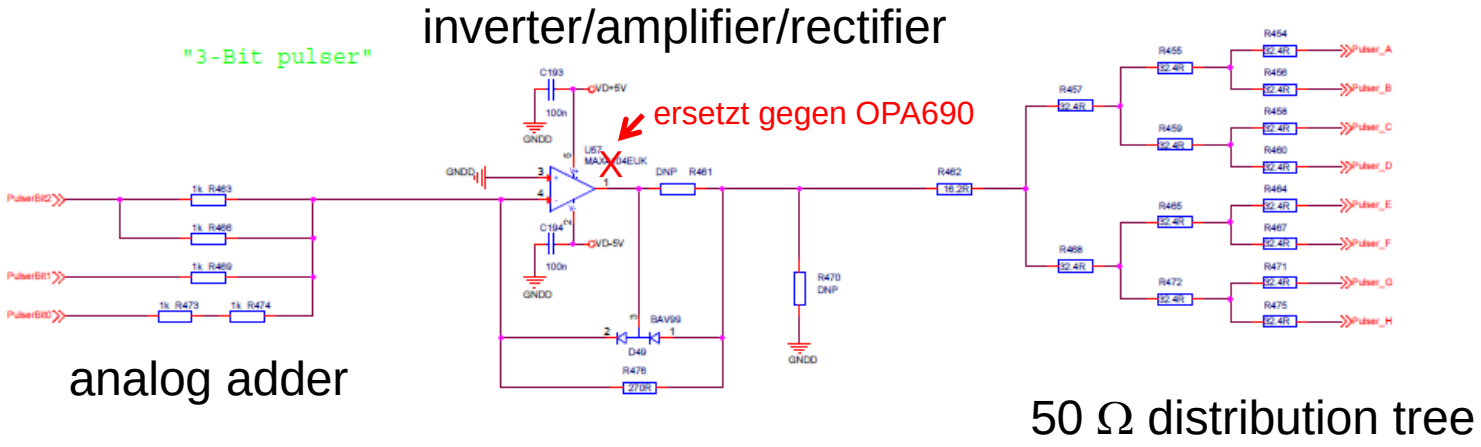
- ~37000 original PMT-pulses recorded in a Ca48 run
- converted to AWG 7122C format
- AWG run with ~0.5 Hz (~24h)

All peaks could be dedicated to related charge states



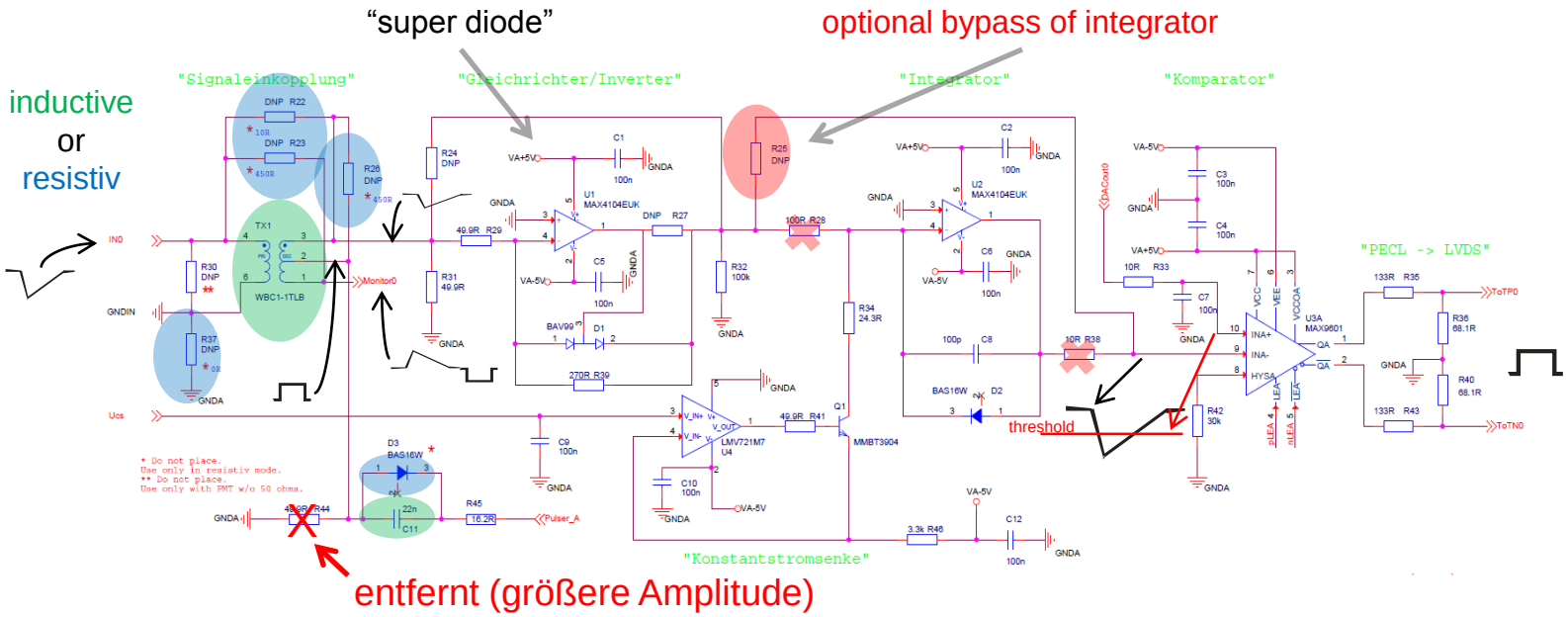
go4 analysis

NeuLANDFQT1 (on-board pulser)



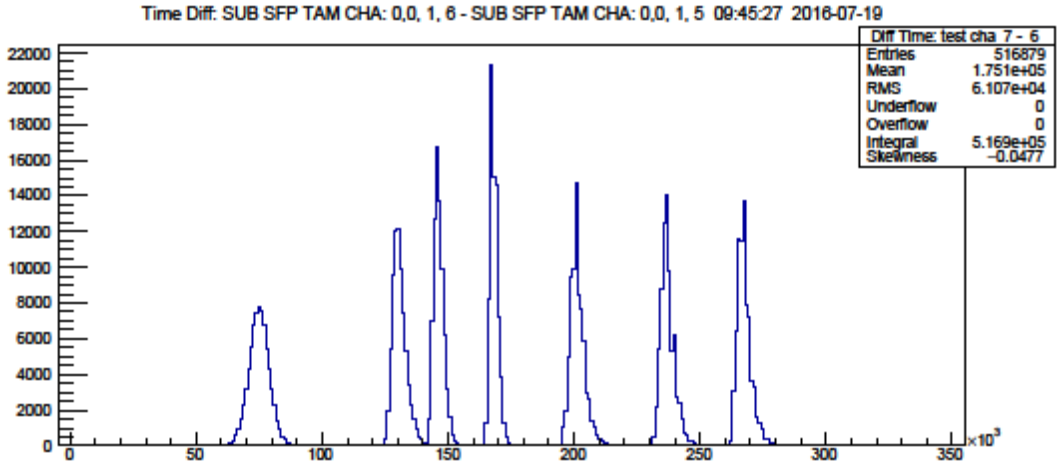
- external driven pulser with 3-bit amplitude resolution
- primary signal routed through CPLD
- no noticeable timing misalignments of separate “pulser bits”
- maximum amplitude reaches medium energy equivalent signals

NeuLANDFQT1 (input stage)



- input stage optional working in inductive or resistive mode
- parts of the circuitry could be bypassed for special applications, e.g. high rate applications

NeuLANDFQT1 (enhanced pulser)



Pulsbreiten mit “seven peak” pulser option

Optional:
- 7 nacheinander folgende Pulshöhen (gesteuert durch CPLD, ext. Pulser)
- Synchronisation der FQTs bei f<6Hz (“watchdog”)
- direkte Überwachung der Temperaturabhängigkeit
- nicht äquidistante Abstände: Folge der “threshold”-Kennlinie und Pulsersteuerung