Forward Endcap Issues

"Gluonic Excitations"

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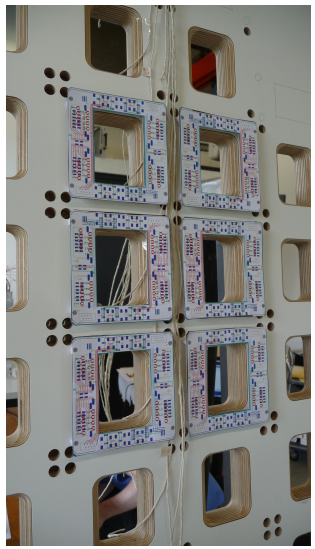
Preparation of Proto192 for 2014 beam time

- Mounting two 16-crystal subunit of final design
  - One equipped with VPTTs
  - One equipped with APDs
- Final design:
  - Dow Corning RTV-3145 glue
  - Mounting procedure
    (tube-crystal glueing prior to crystal mounting)
  - VPTT types (aluminum stripe cathode)
  - Final labeling scheme (barcode labels)
  - Signal/power supply routing:
    checkerboard PCBs (Bonn design)
  - Minor mechanical changes
  - Final shaper, ADC design

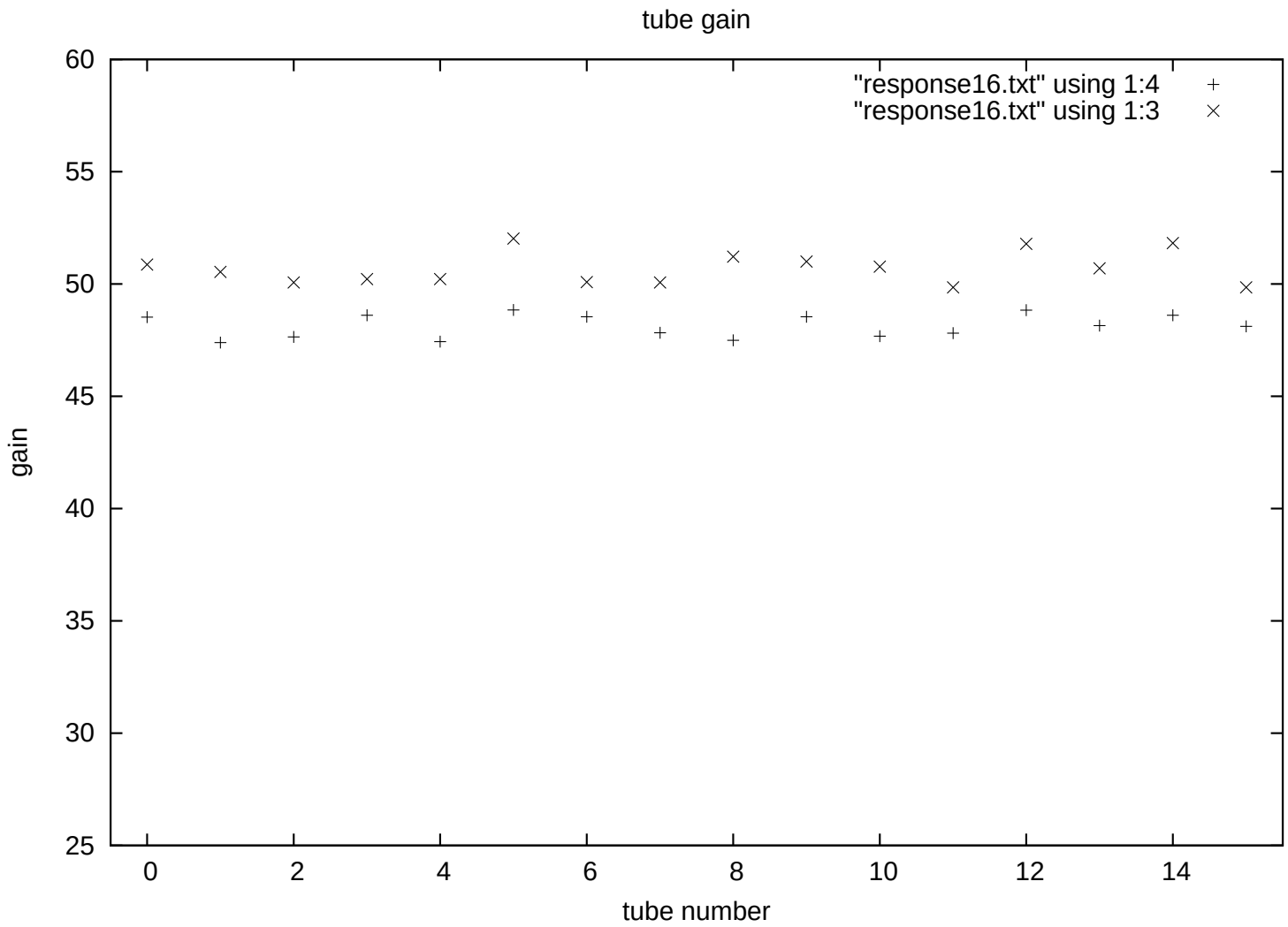


Preparation of Proto192 for 2014 beam time

- Problems in former Proto192 beam times:
  considerable higher channel to channel variation
  as expected from tube/apd gain or crystal light yield variation
- Suspicious: glue coupling (glue type, glueing procedure)
- Beam time: ELSA (August?)
- Spread of single channel response in subunit?
- Covering of dynamic range/gain of preamp
  (12 GeV w/o clipping)

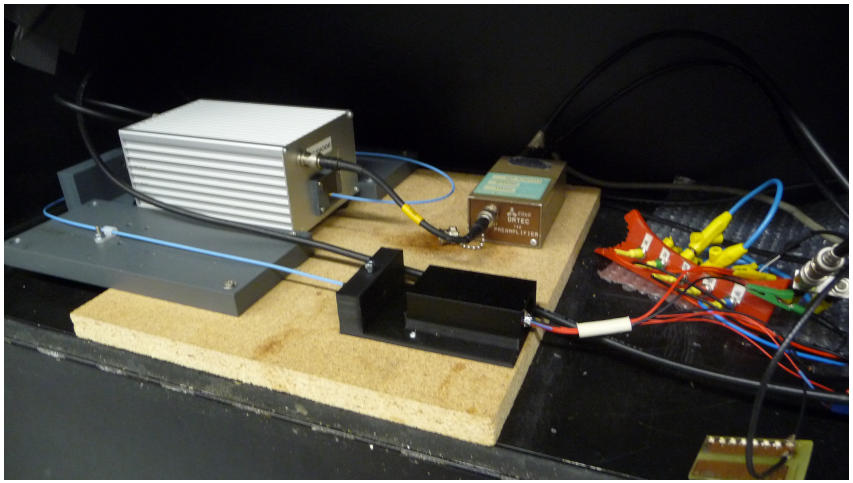
Preparation of Proto192 for 2014 beam time

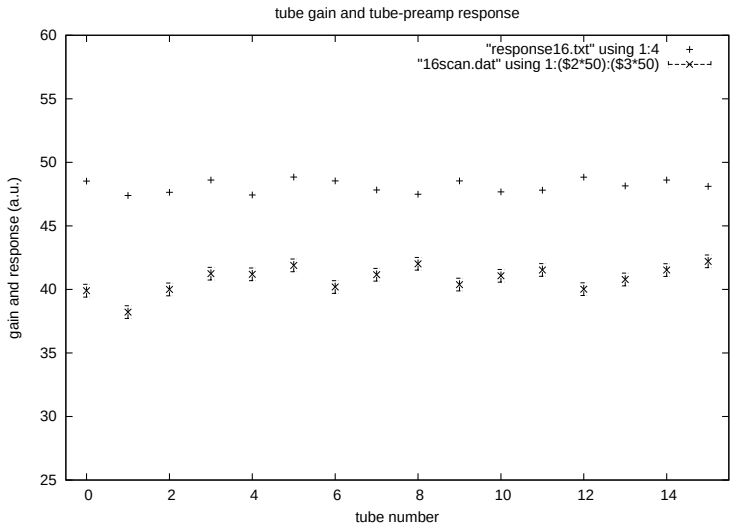
- Selecting 16 VPTTs with similar gain:



Preparation of Proto192 for 2014 beam time

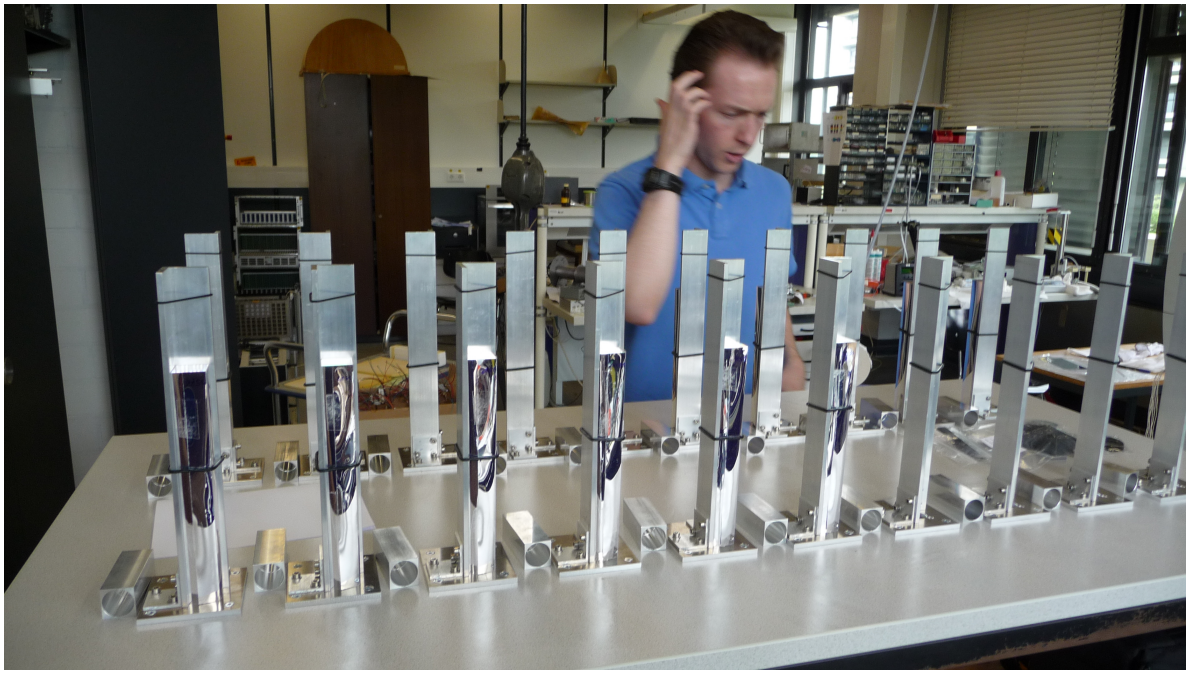
- Checking response of VPTT-preamp units (tube gain, QE, cathode size, preamp gain):
- Test setup with light pulser and PIN diode reference

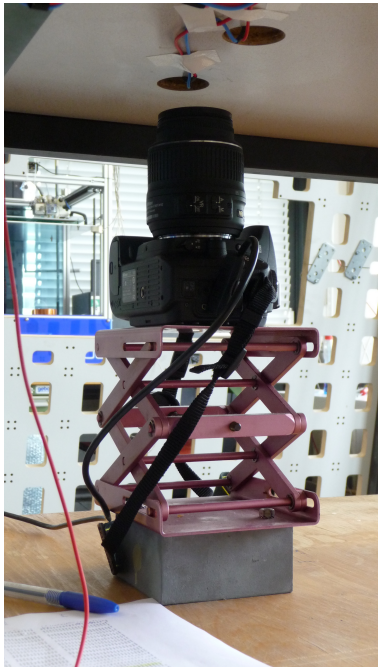




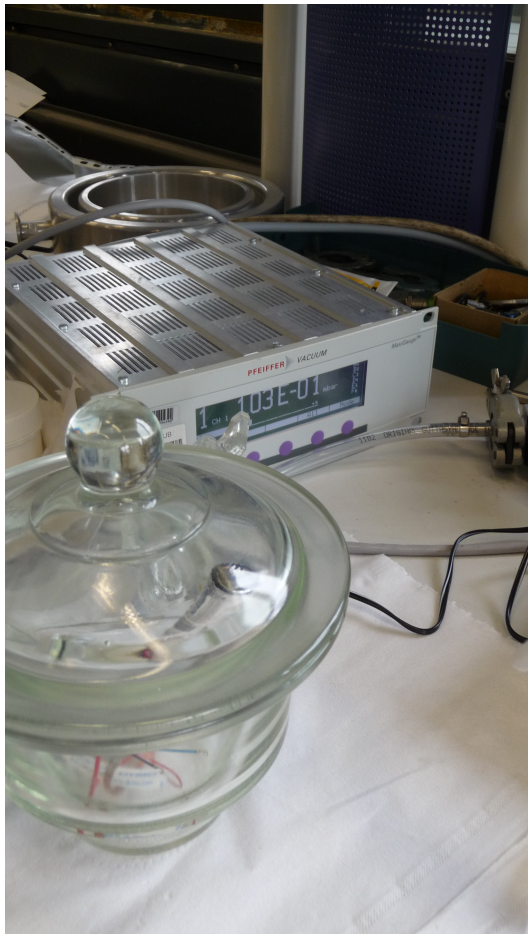
VPTT-preamp to crystal glueing

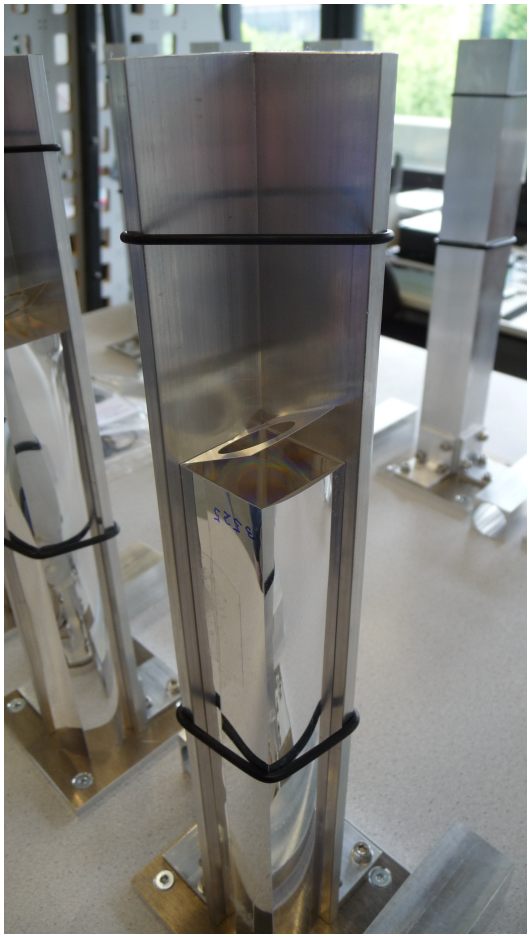
- Glueing gauge: centering of tube on crystal by alignment tool
- Monitoring and archiving of coupling



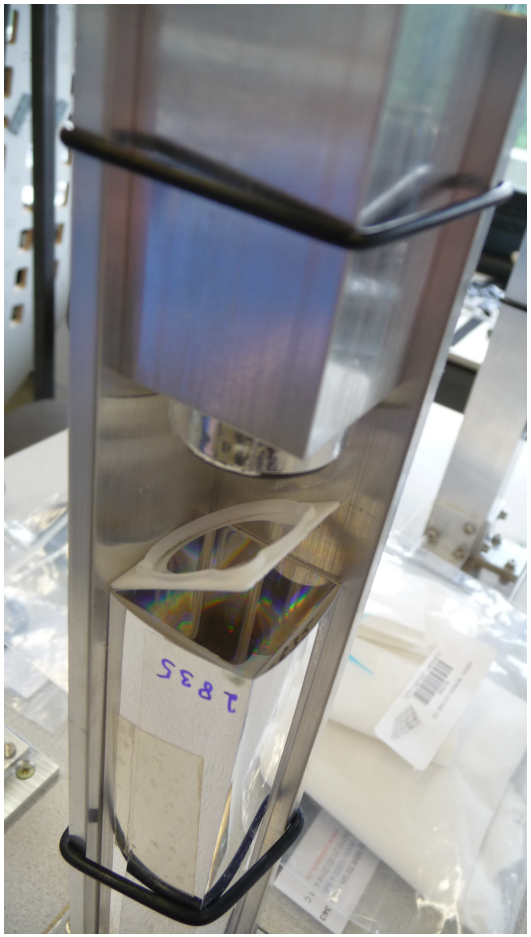


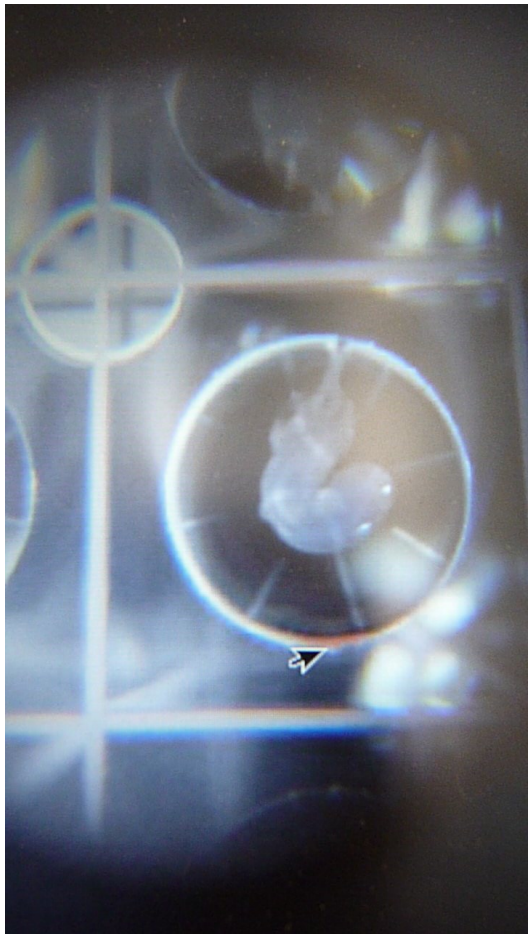
VPTT-preamp to crystal glueing

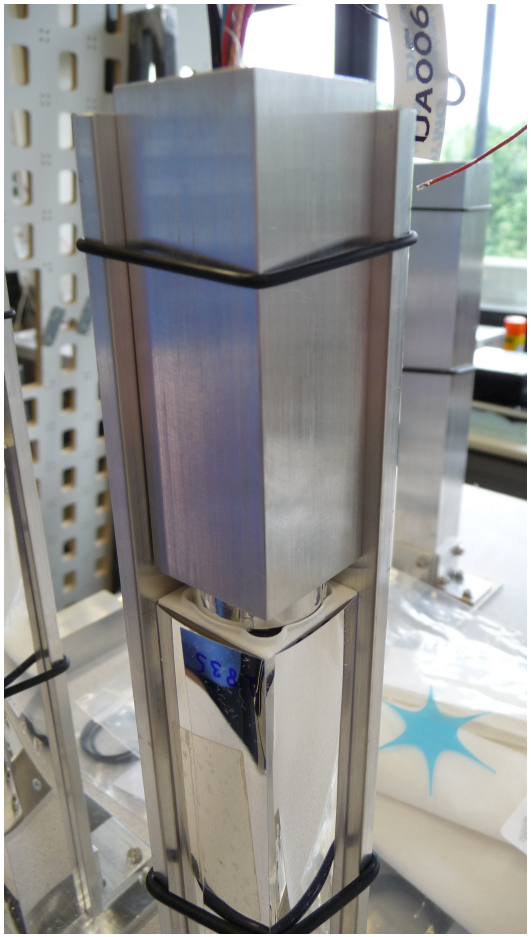




VPTT-preamp to crystal glueing

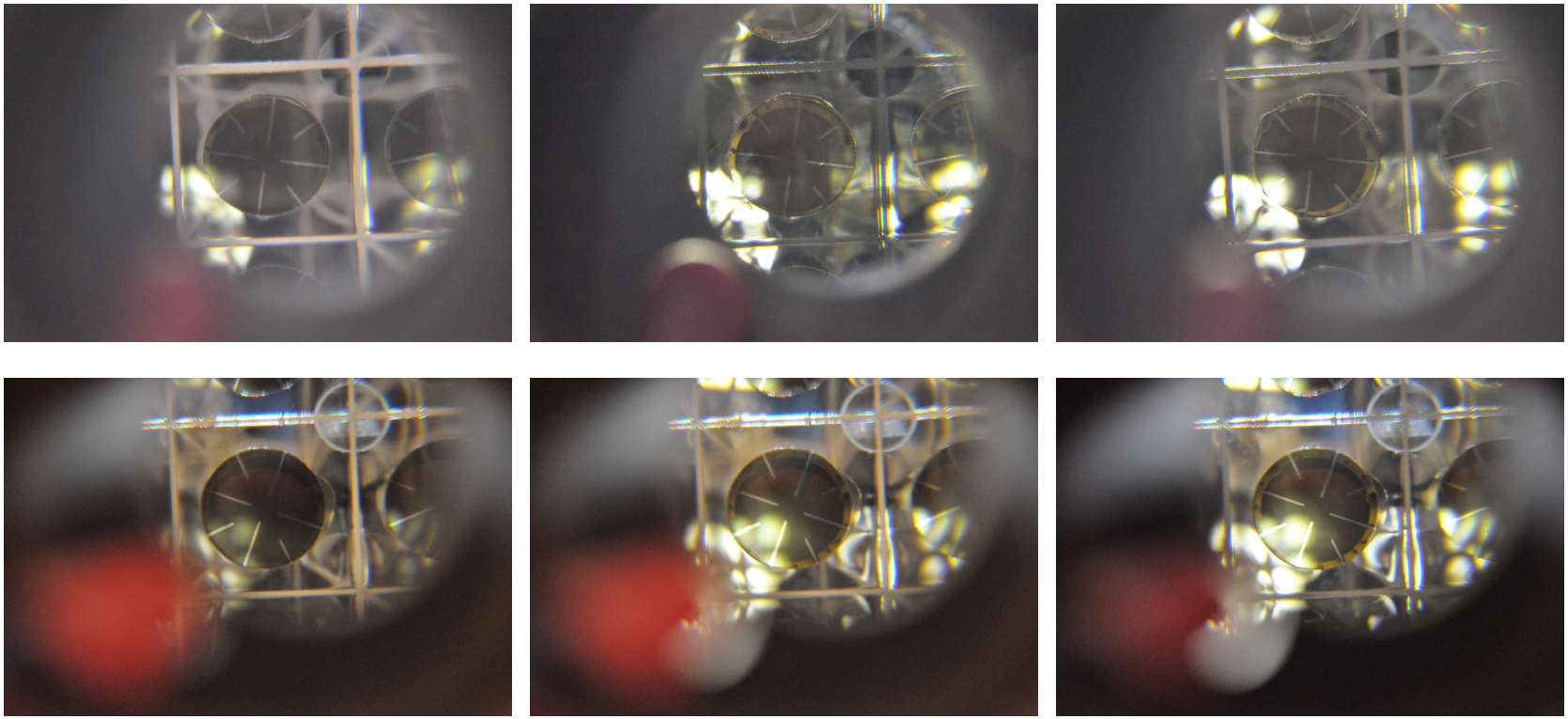






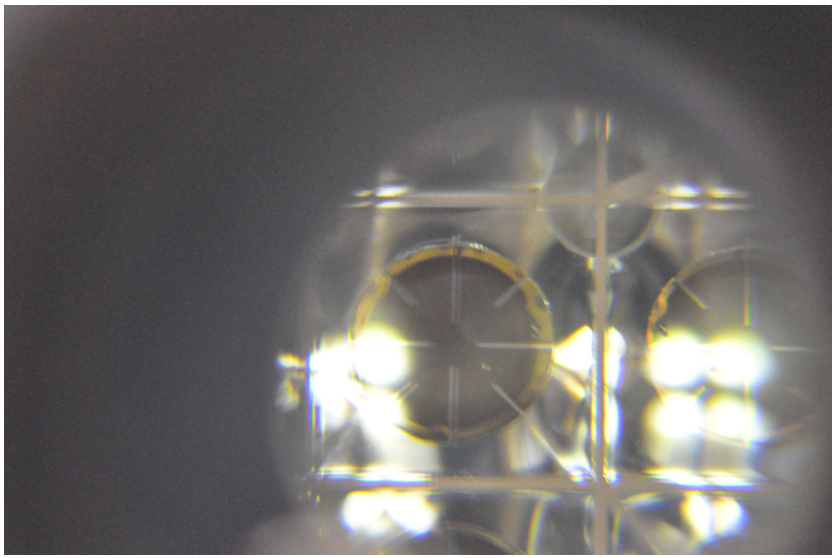
VPTT-preamp to crystal glueing

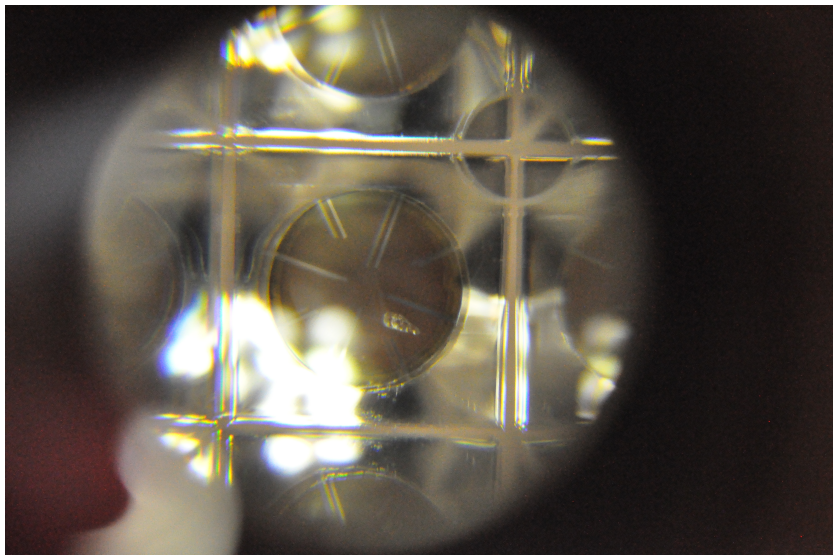
- Surveillance of bonding with different LED intensities



VPTT-preamp to crystal glueing

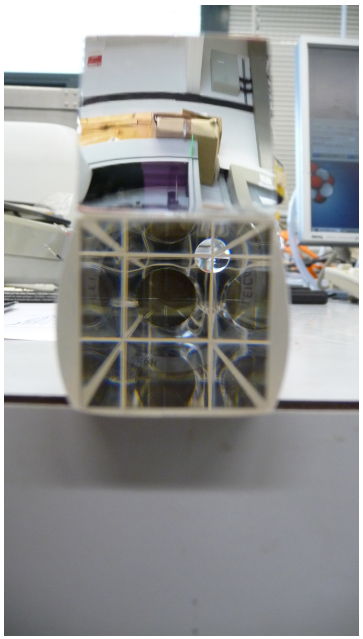
- 2nd monitoring after about 24 h of curing necessary!
- Tiny trapped air bubbles
  sometimes show up hours after coupling
- At that time tube can still be removed and reglued

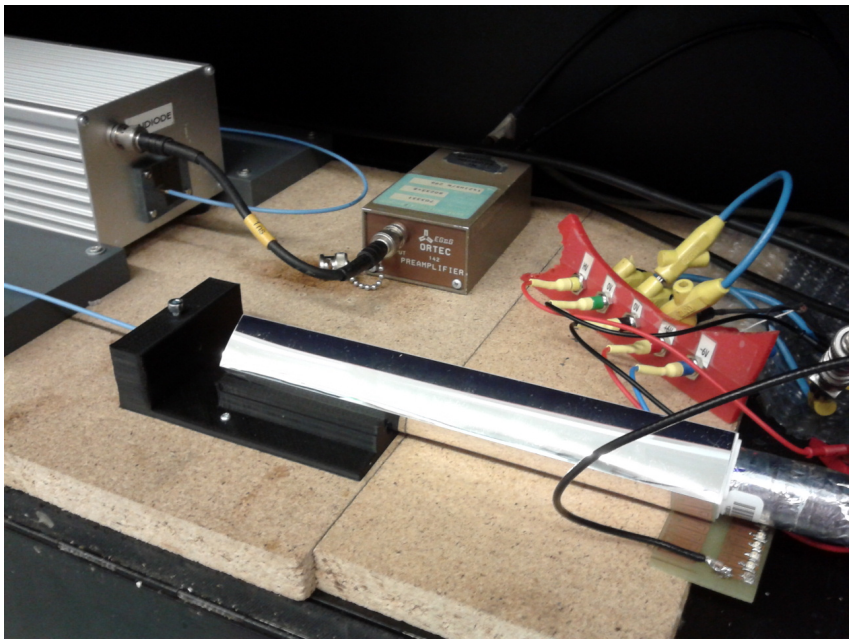




VPTT-preamp to crystal glueing

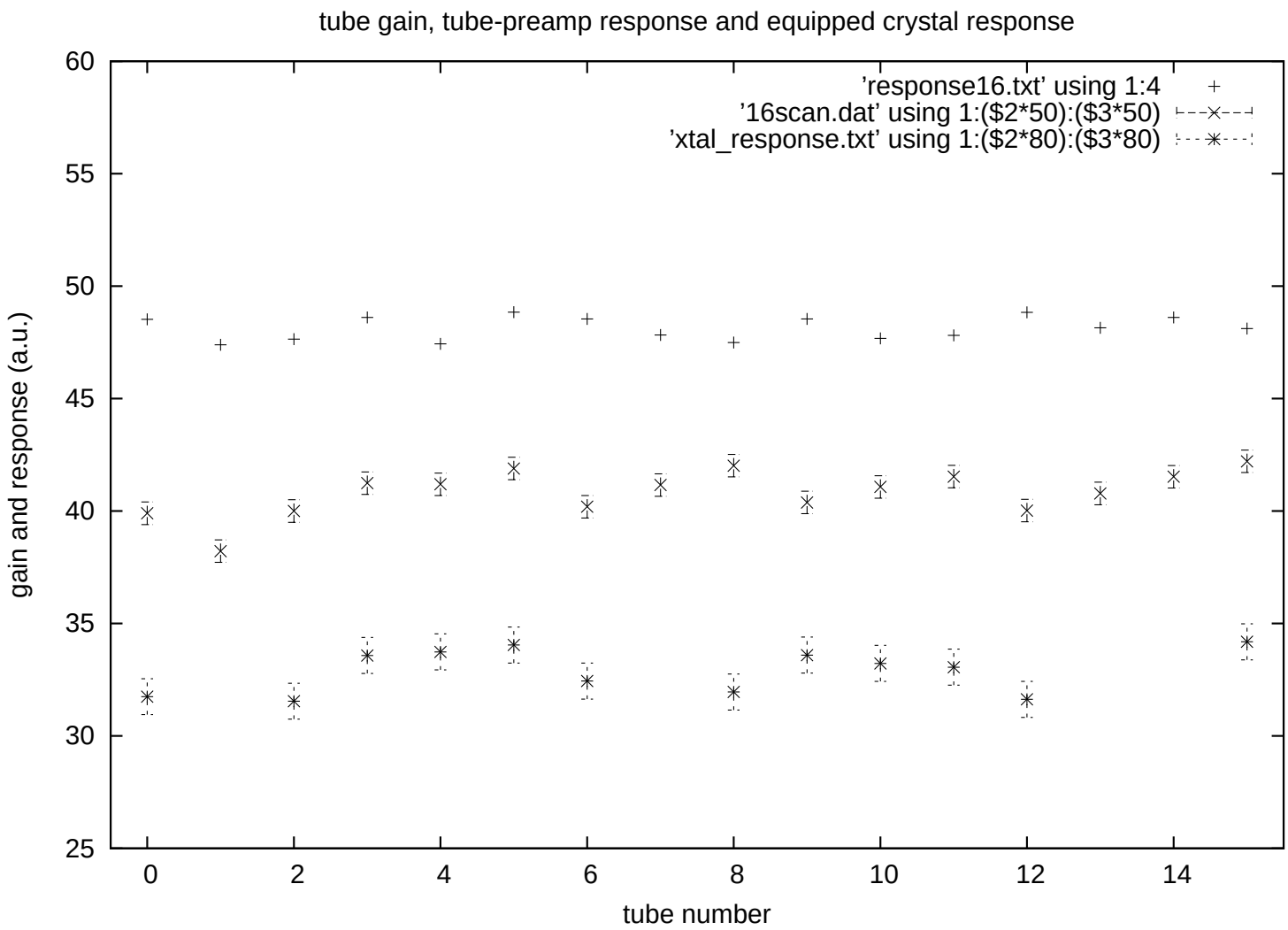
- Final optical check
- Response measurement of crystal-VPTT-preamp units
- Closing of front reflector foil





VPTT-preamp to crystal glueing

- "Check" of coupling: response test with crystal



VPTT-preamp to crystal glueing

- VPTT equipped crystals ready to be mounted to alveole

Preparation of Proto192 for 2014 beam time

- Same procedure for APD subunit assembly
- Screening of 50 APDs done: Selection of gain(U), d(gain)/dU
- Checkerboard PCBs from Bonn expected soon
- Shaper/APD boards from KVI/Uppsala expected soon