Motherboard status
First look at R11265

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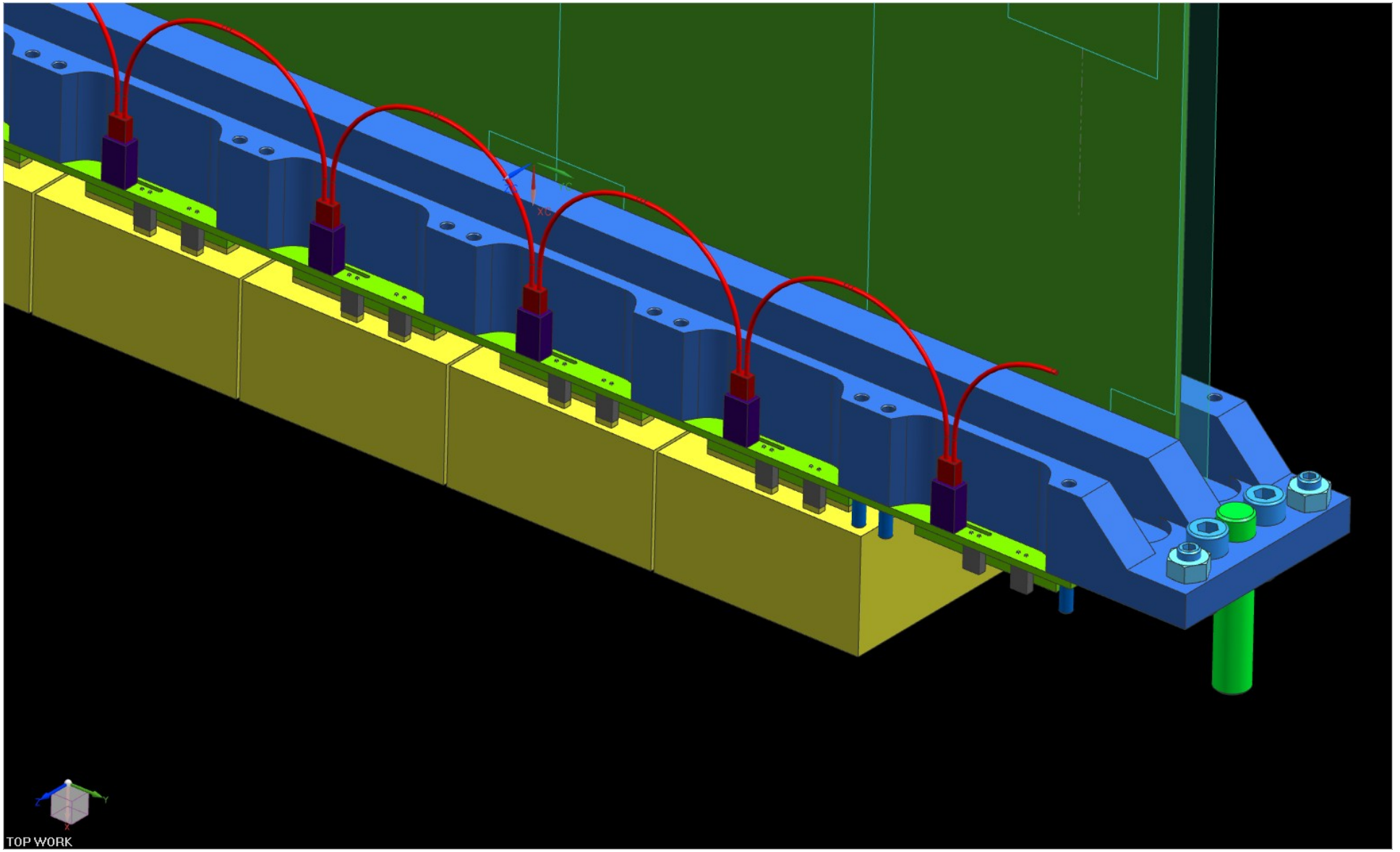
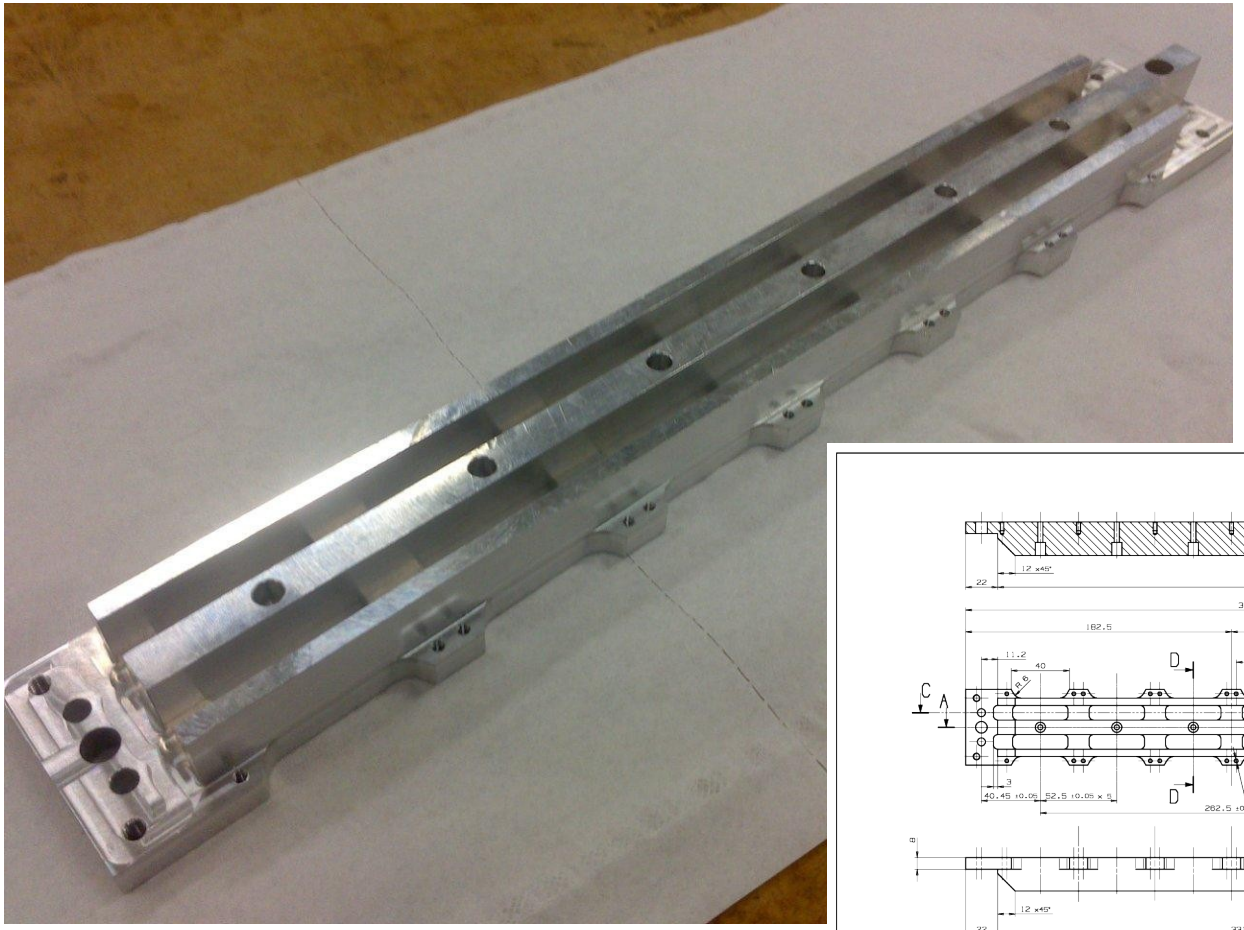
Outline

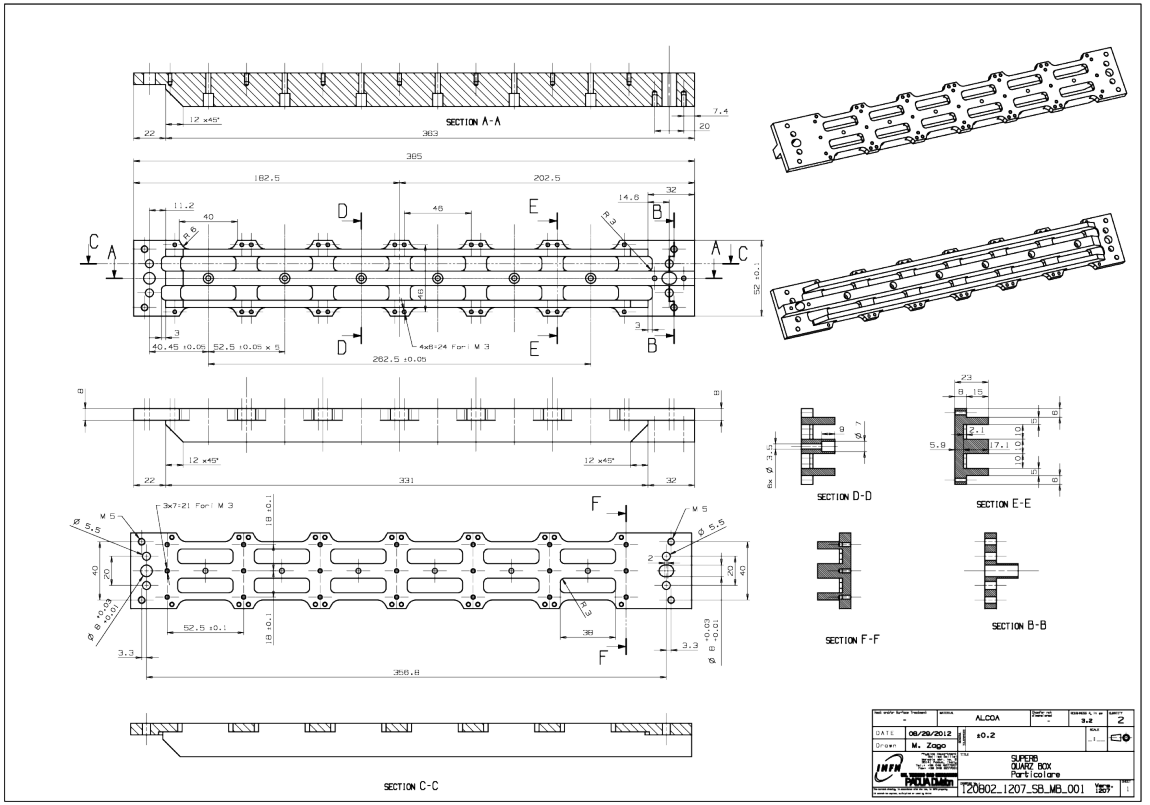
- Motherboard
  - Al frame final design
  - Frame prototype
  - PCB Electrical design
  - Plan
- R11265
  - Setup
  - Pulse height distribution without amplification
  - TTS for one pixel with amplification
  - plans
- 1 Quartz block procurement

Motheboard 3D model

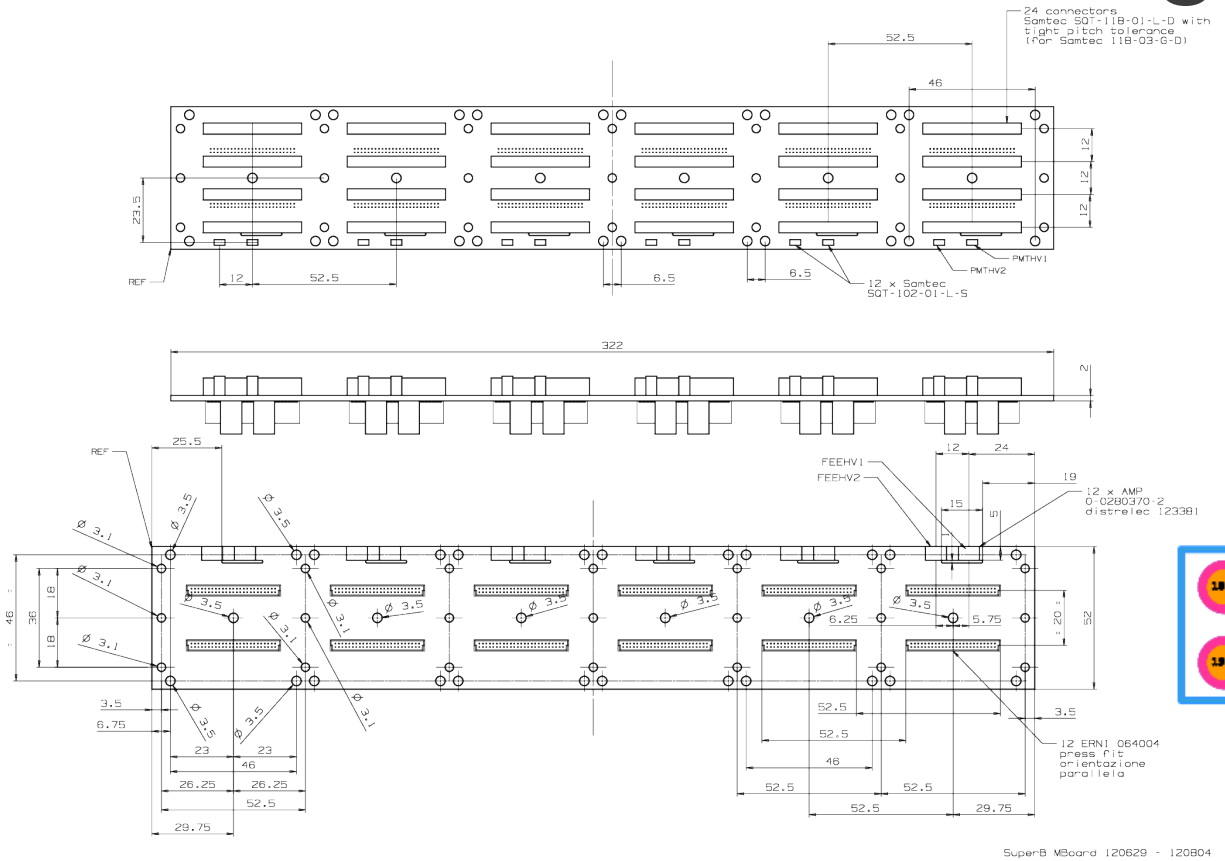


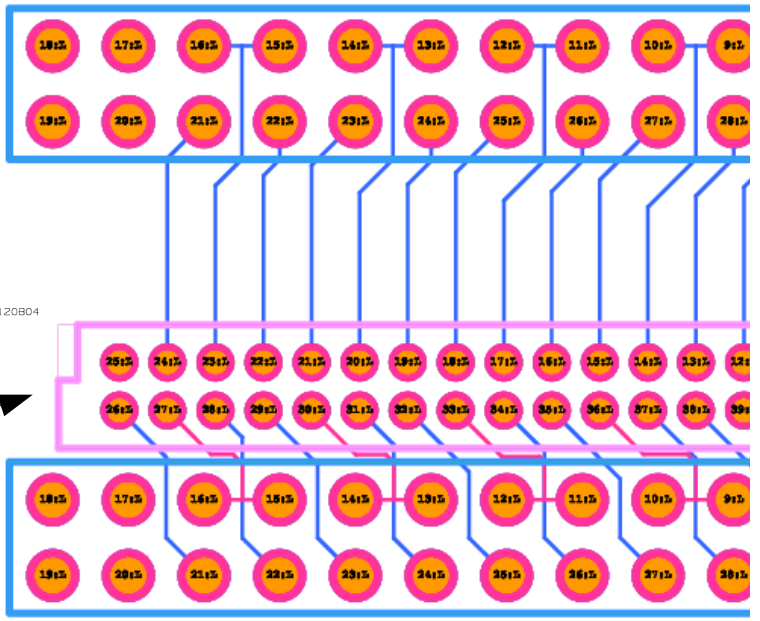
Al Frame




SECTION A-A
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION B-B
SUPERB
QUARZ BOX
Particolare
120802_1207_SB_MB_001

PCB design





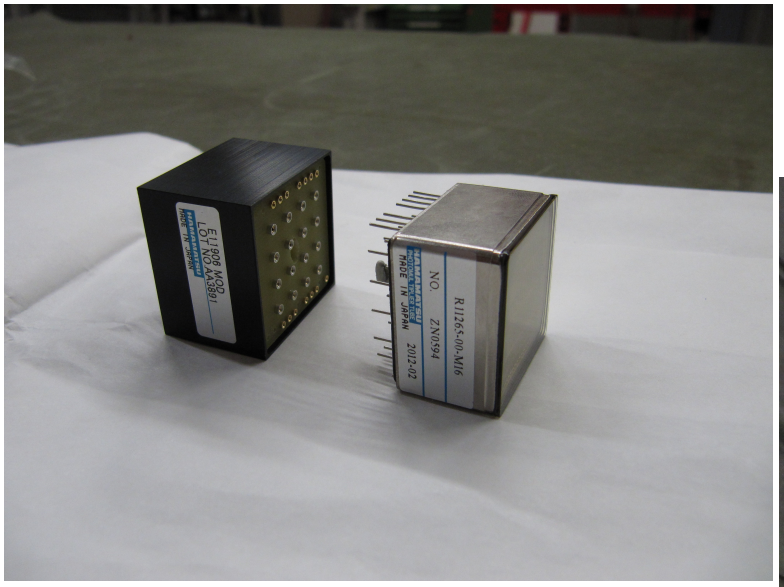
FE board connector

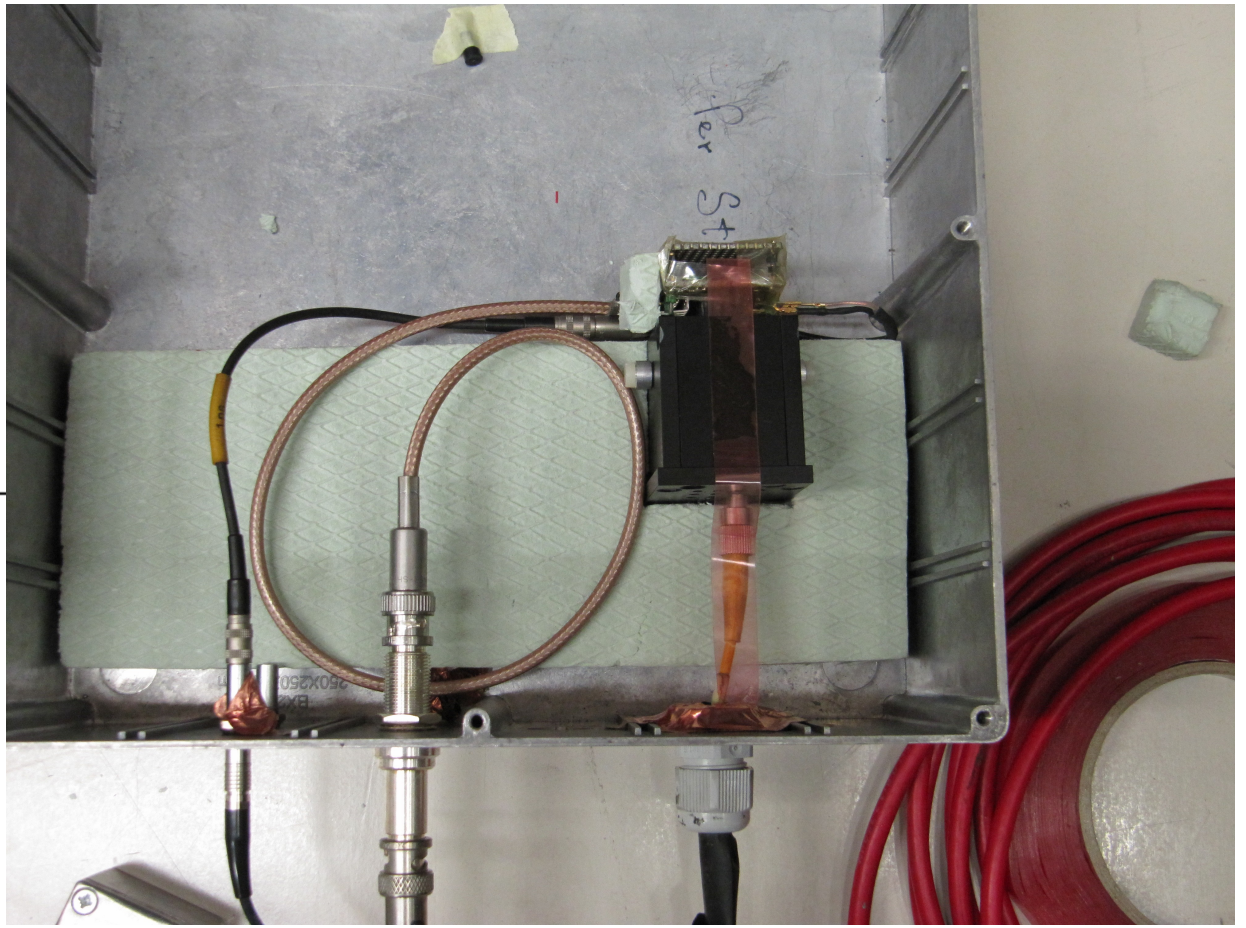
PMT connector

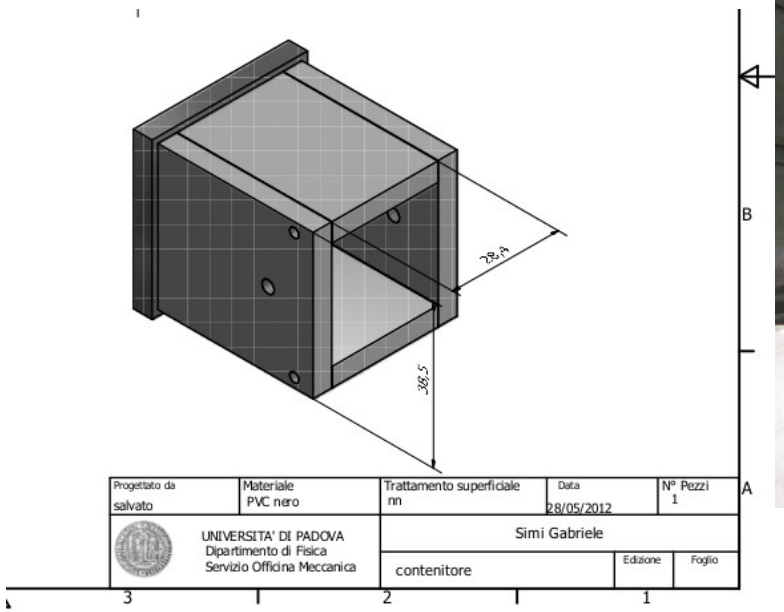
Plans

- Aluminum frame deflection test/measurements
- Dummy front end board with connectors
  - Test alignment and precision
  - Insertion force
- Dummy PMT with connectors
  - Test pmt alignment procedure
- HV cable routing

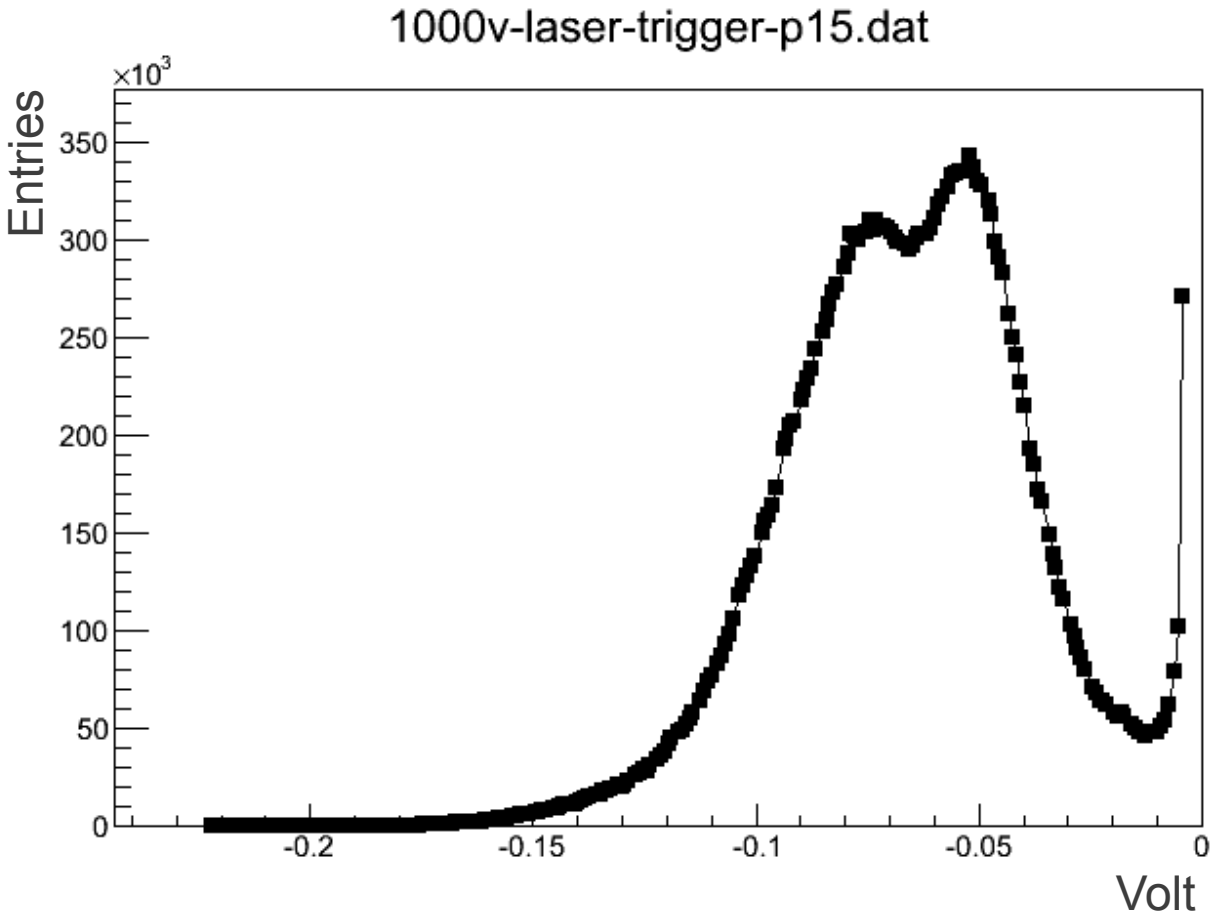
R11265-00-M16 Test Setup







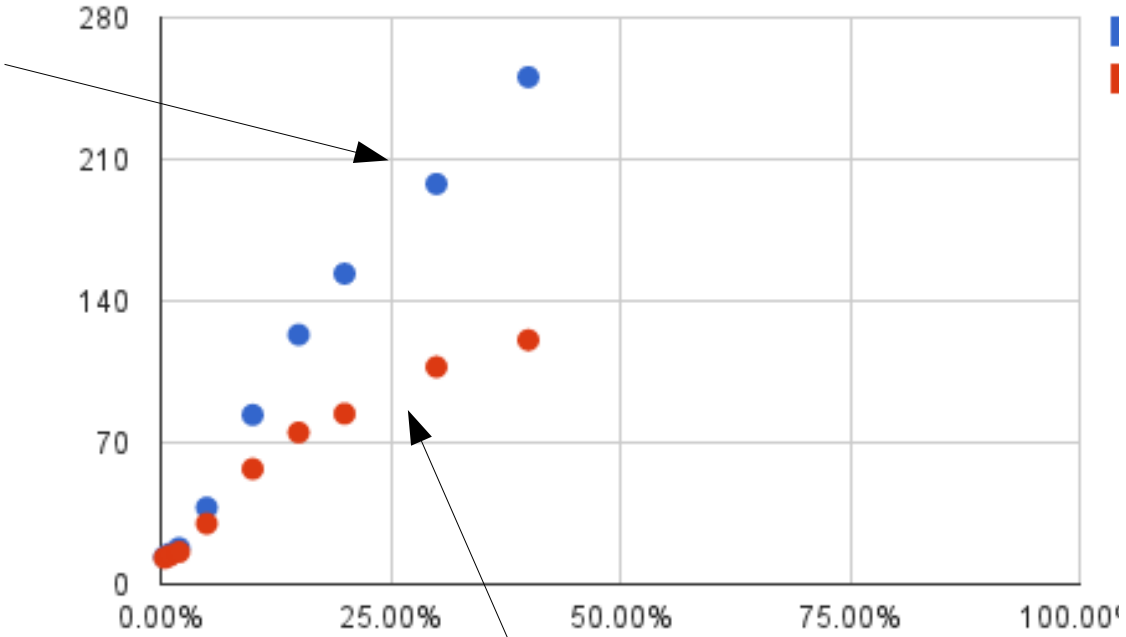
Pulse height distribution



Triggered on laser pulse incident on pixel 15
Histogram from oscilloscope, no preamplification
Pedestal well separated from signal. 1 gamma signal ~ 53mV
Double peak structure, clearly saturation

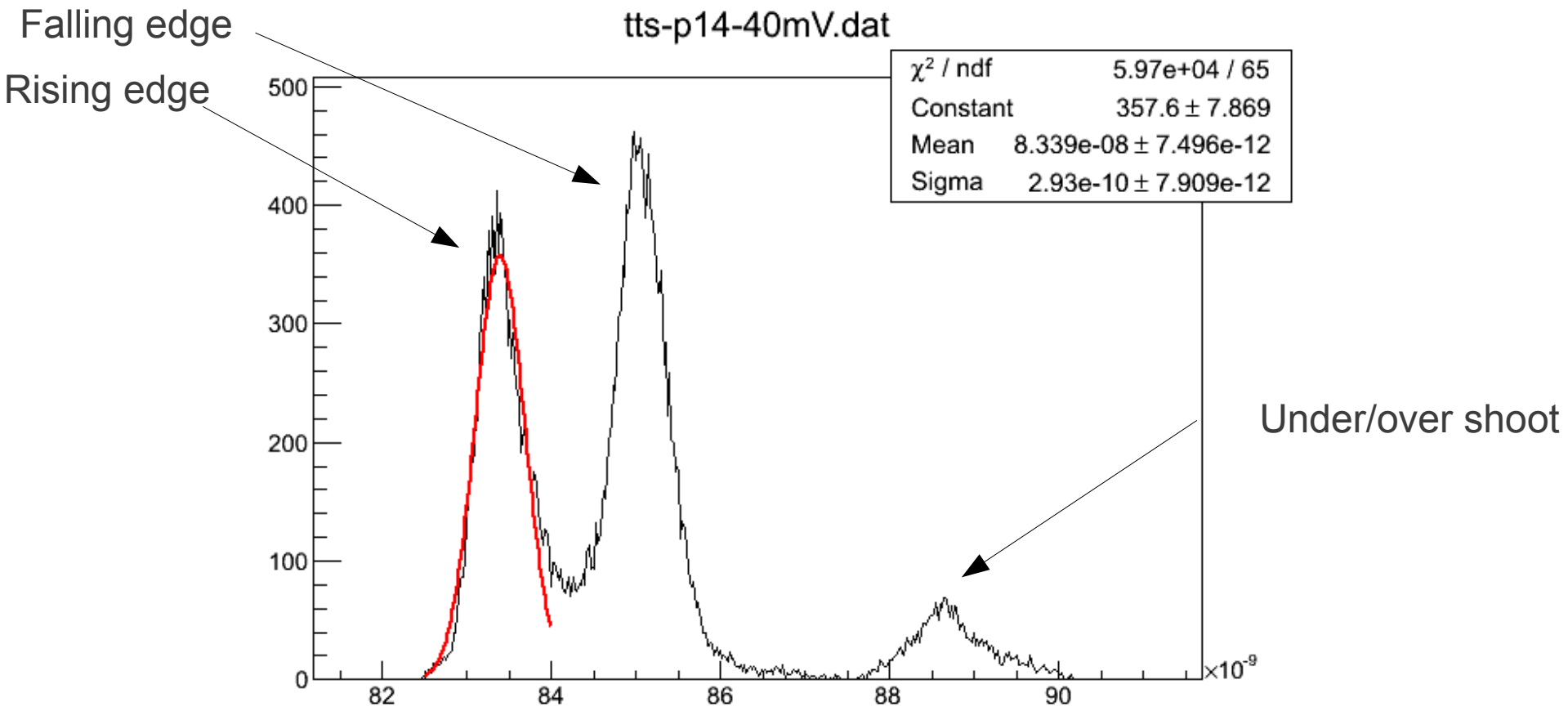
Saturation

Mean of the pulse height distribution assuming poisson statistics and no saturation



Mean of the pulse height histogram

Pulse time distribution



Signal Amplified with THS 4303 (x5 amplification)
Histogram show the distribution of times for crossing a threshold of 25%
No time walk correction, time resolution ~ 300ps

Plan

- Test R11265-100-M64 (super Bi-alkali, 64 pixels) that we just received
  - Single photon detection
  - Absolute efficiency
  - Geometrical efficiency (should be much better than earlier prototypes)
  - Measure Gain and efficiency variation among pixels
  - Test charge injection on dynode 12
  - ….

Quartz procurement

- [very likely] obtained funding from INFN for the procurement of one quartz block + wedge
  - 78 K Euro for 2012
  - Additional 10-20 K Euro from other 2012 budget
- Allows to buy from Roechester company
  - Raw block + machining + polishing + plating
  - Wedge
- Start the process for the call for tender with at least three companies by the end of the year
- Request for offer can be delayed to April. Allows modifications to the design, if necessary, after the analysis of SLAC prototype data
- Order can be made in August
- Need to make direct contact with Roechester company soon

Conclusion

- Motherboard mechanical frame prototype constructed
- Electrical design done, waiting for bureaucracy
- Initial tests on R11265 show interesting results on single photon performance
- Funding for the procurement of one quartz block + wedge most likely approved