

# Status of the Beetle Readout for the MaPMTs

- history of events
- documentation of setup
- prospects of near future

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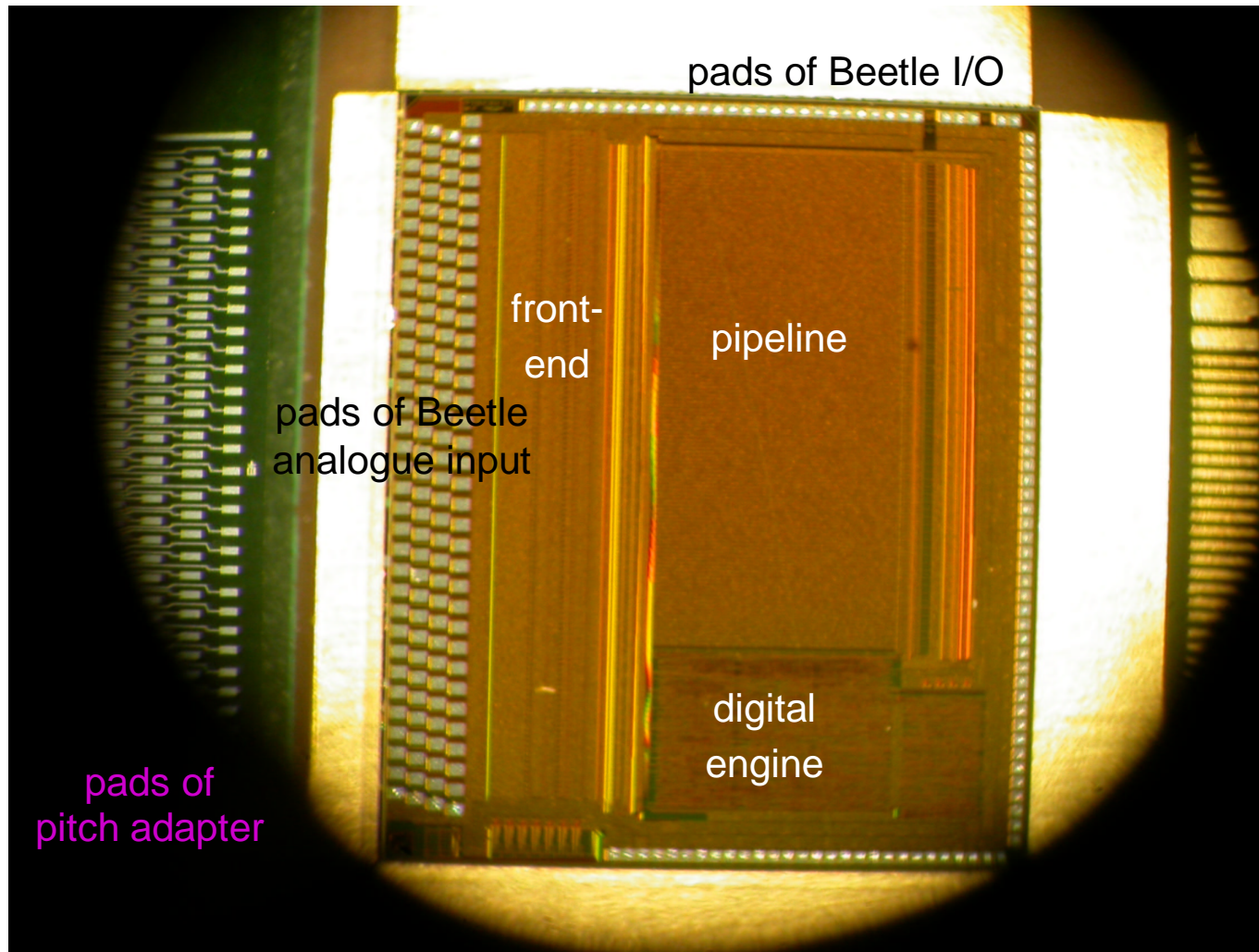
# History of Events I

- Thu 14.08.: first ever boardBeetle 1.2 finished and shipped to Edinburgh
- Fri 15.08.: lorry of carrier crashed in road accident
- Mon 18.08.: shipment of first boardBeetle 1.2 arrived at Edinburgh  
visual inspection: board OK
- Wed 20.08.: first data frames after sorting out problems in the I2C level  
adaptation and the temporary cabling
- Wed 20.08.: first boardBeetle 1.2MA0 finished and shipped to Edinburgh
- Thu 21.08.: adaptation of FED to differential read-out and  
first ever LED light signals via DAQ chain (boardBeetle 1.2)  
➡ success!  
(although a limitation of the dynamic range was observed –  
amplifier saturates?!?)
- Fri 22.08.: test of boardBeetle 1.2MA0  
➡ success!
- Sat 23.08.: pack and go

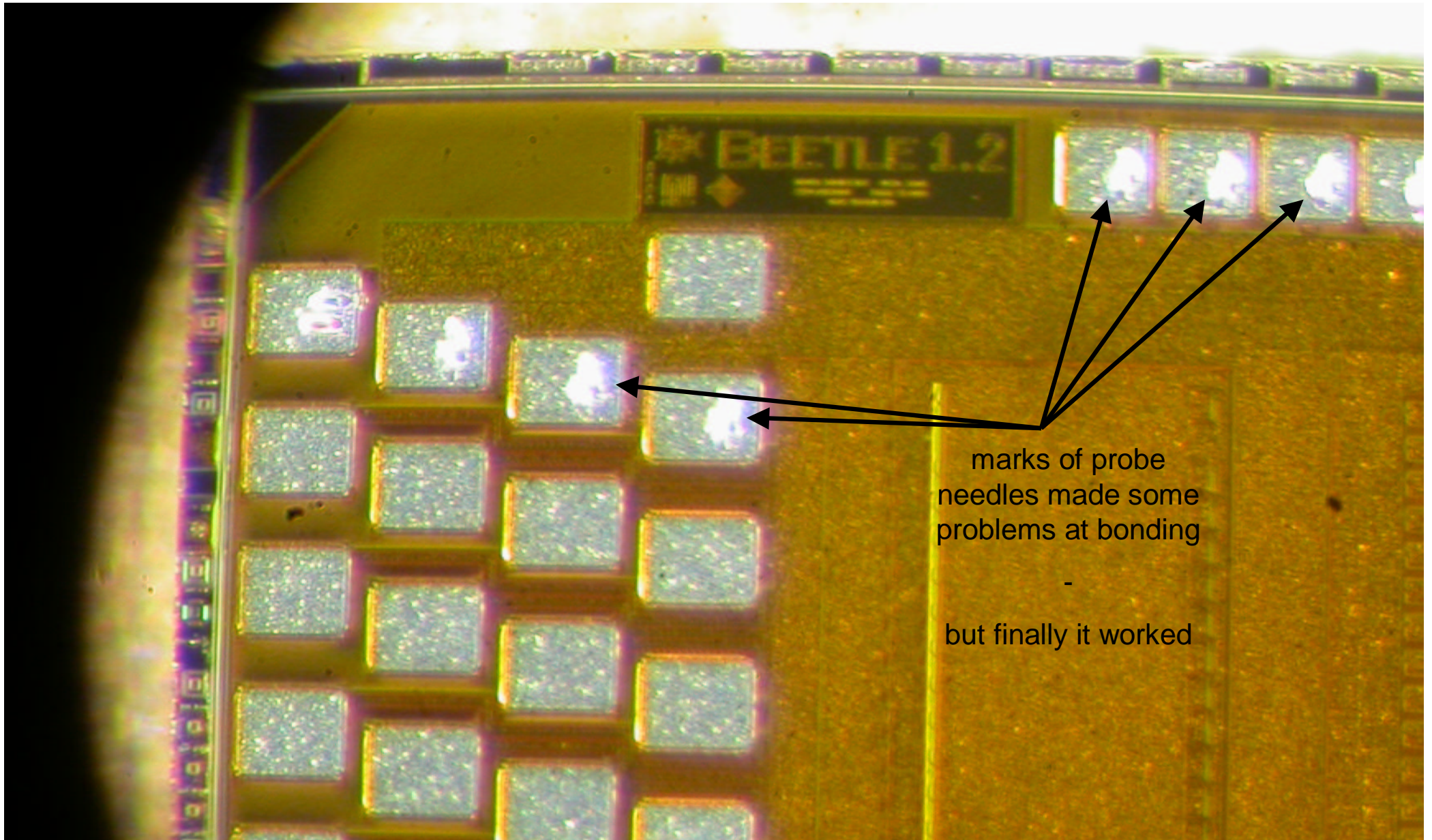
# History of Events II

- Sun 24.08.-Wed 27.08.: troubleshooting of interference between WinXP, NI-interface and Labview on DAQ PC
- Mon 25.08.: 4 more boardBeetle 1.2 delivered to CERN
- Wed 27.08.: move into beam area
- Thu 28.08.-Fri 29.08.: infrastructure & cabling for missing interface board
- Sat 30.08.: tuning of timing &  
first data frames with LED light and one boardBeetle 1.2
- Sun 31.08.: tuning of setup for Cherenkov light &  
first Cherenkov photons with one boardBeetle 1.2
- Mon 01.09.: cabling for the MaPMT cluster due to missing interface board
- Tue 02.09.: I2C problems with cluster ➡ work around found
- Wed 03.09.: mounting & tuning of cluster of 8 8-dynode stage MaPMT
- Thu 04.09.: tuning of read-out map for right geometry match &  
first ring of Cherenkov photons ➡ success!!
- Thu 04.09.: 1 spare differential FED & 1 more boardBeetle 1.2 delivered to CERN (with saturation of amplifier cured)

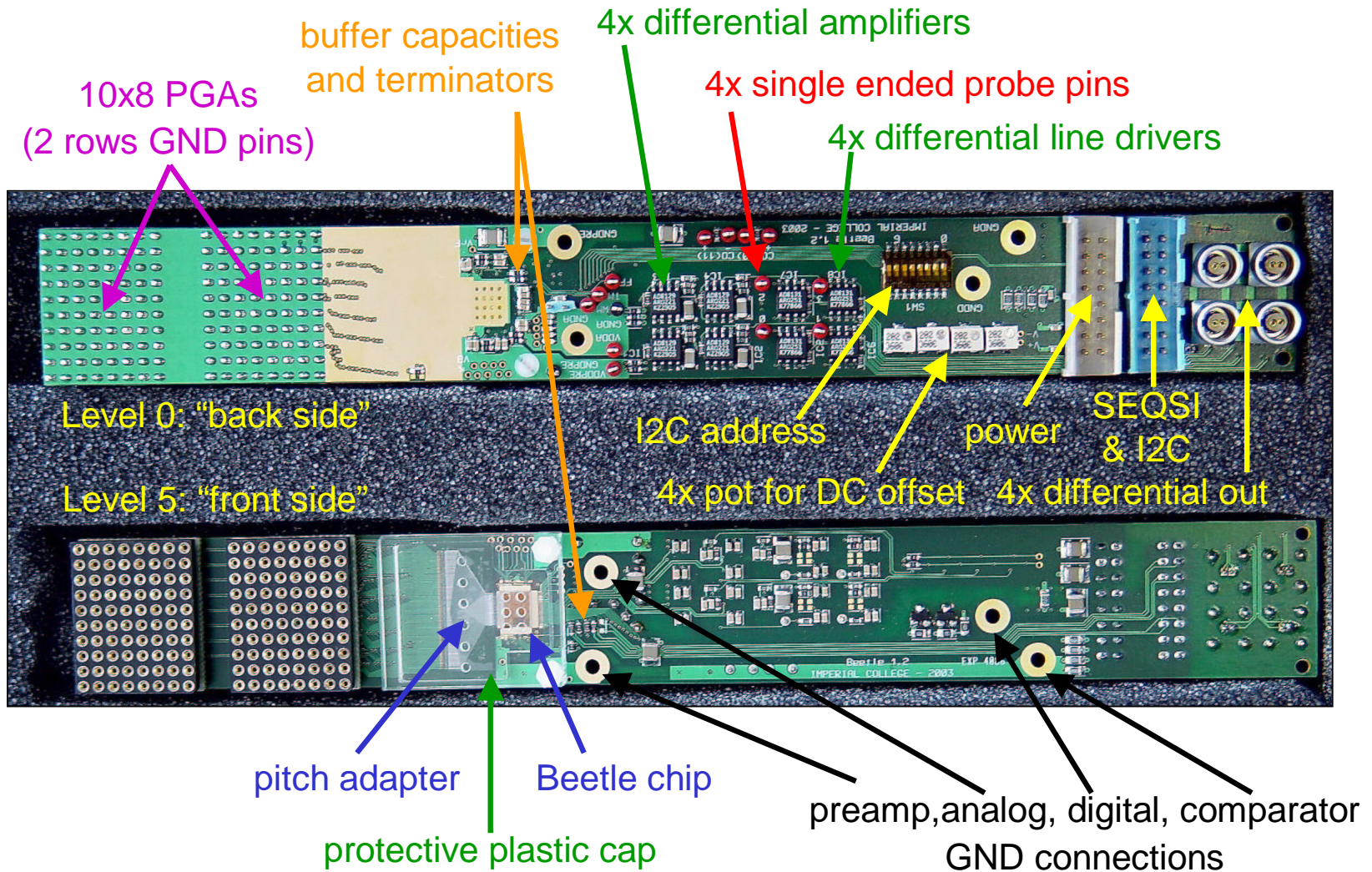
# Beetle 1.2 chip: pre-bonding



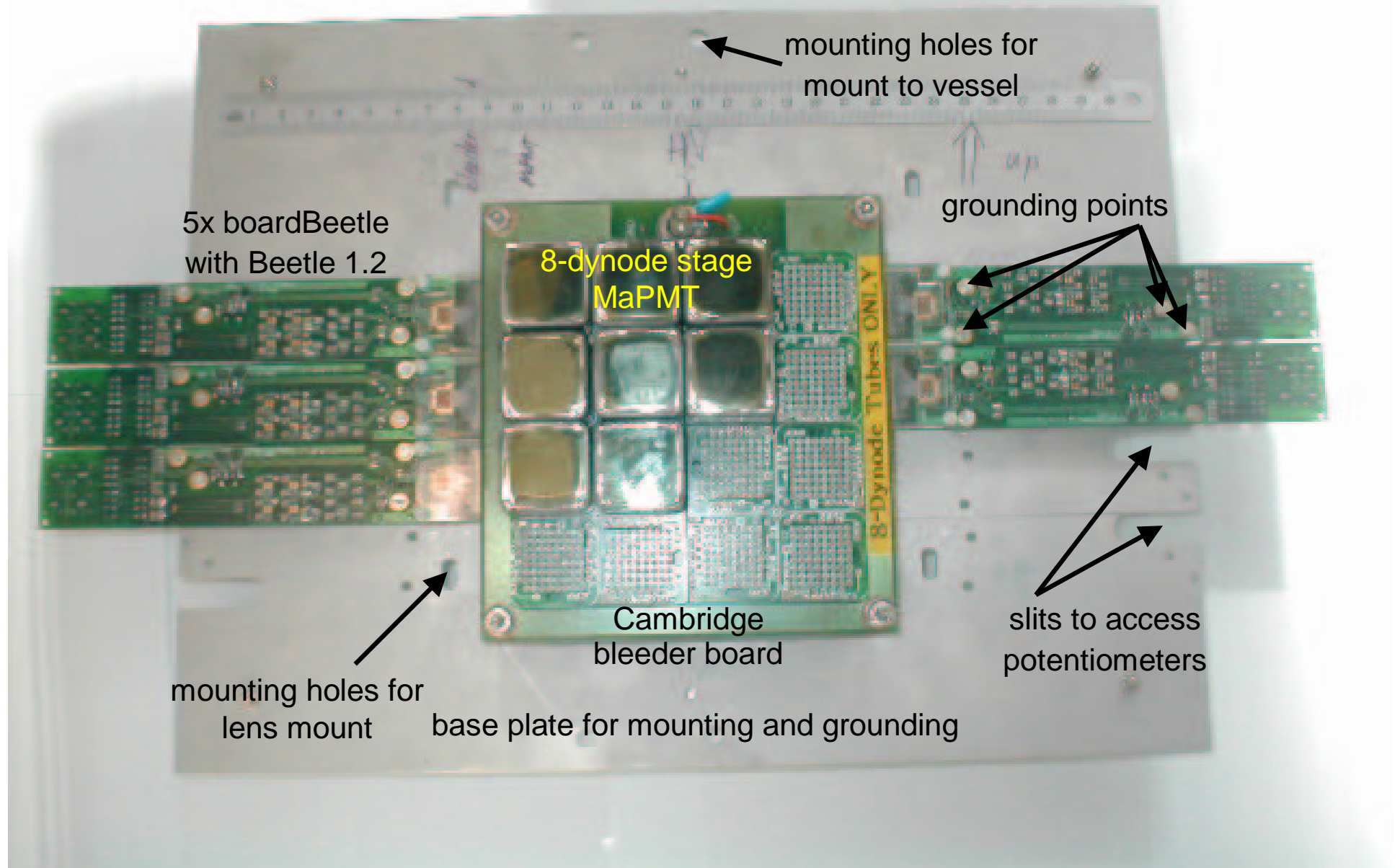
# Zoom for probe-tested Chip



# Equipped boardBeetle

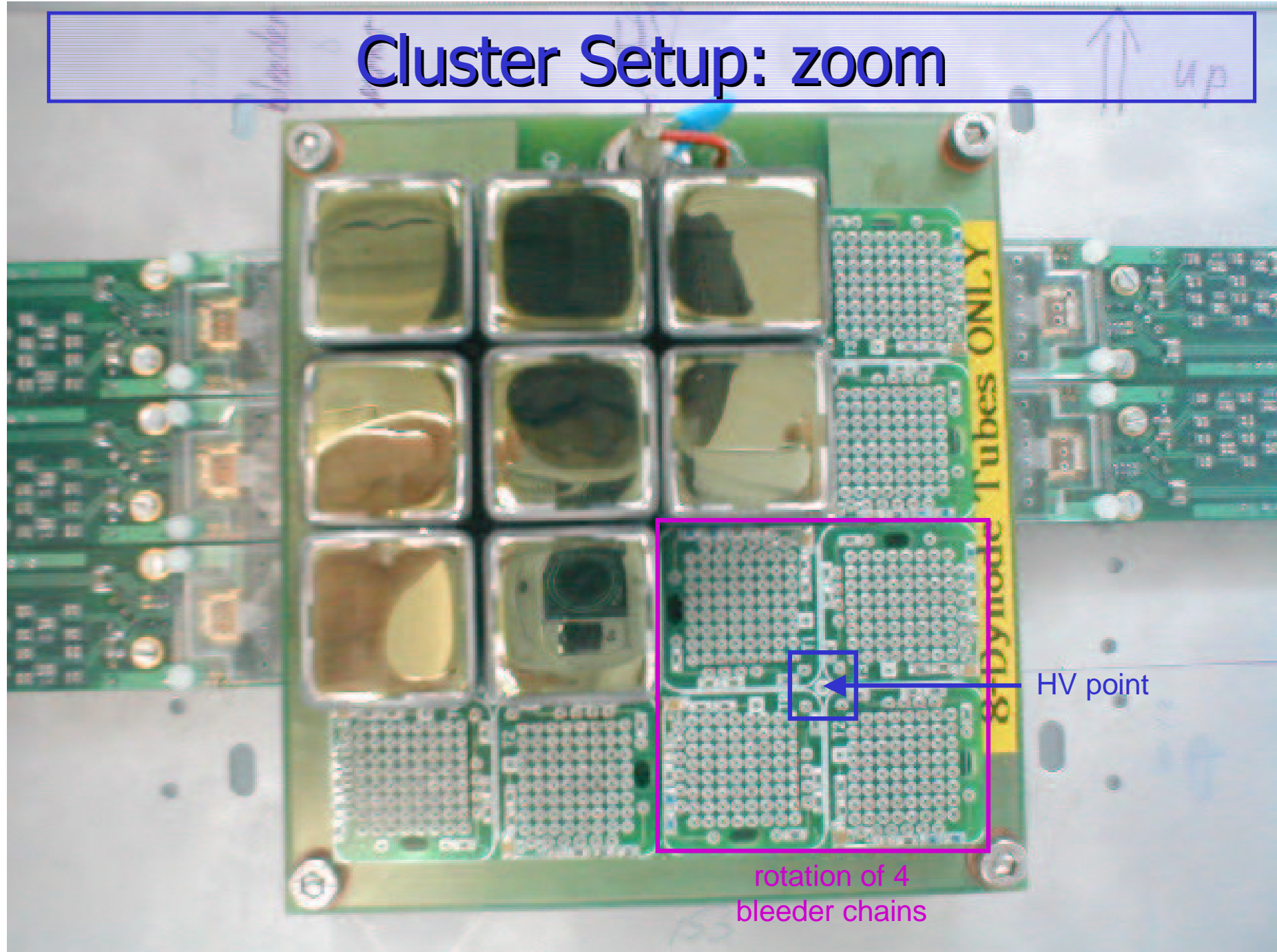


# Cluster Setup



# Cluster Setup: zoom

↑  
up

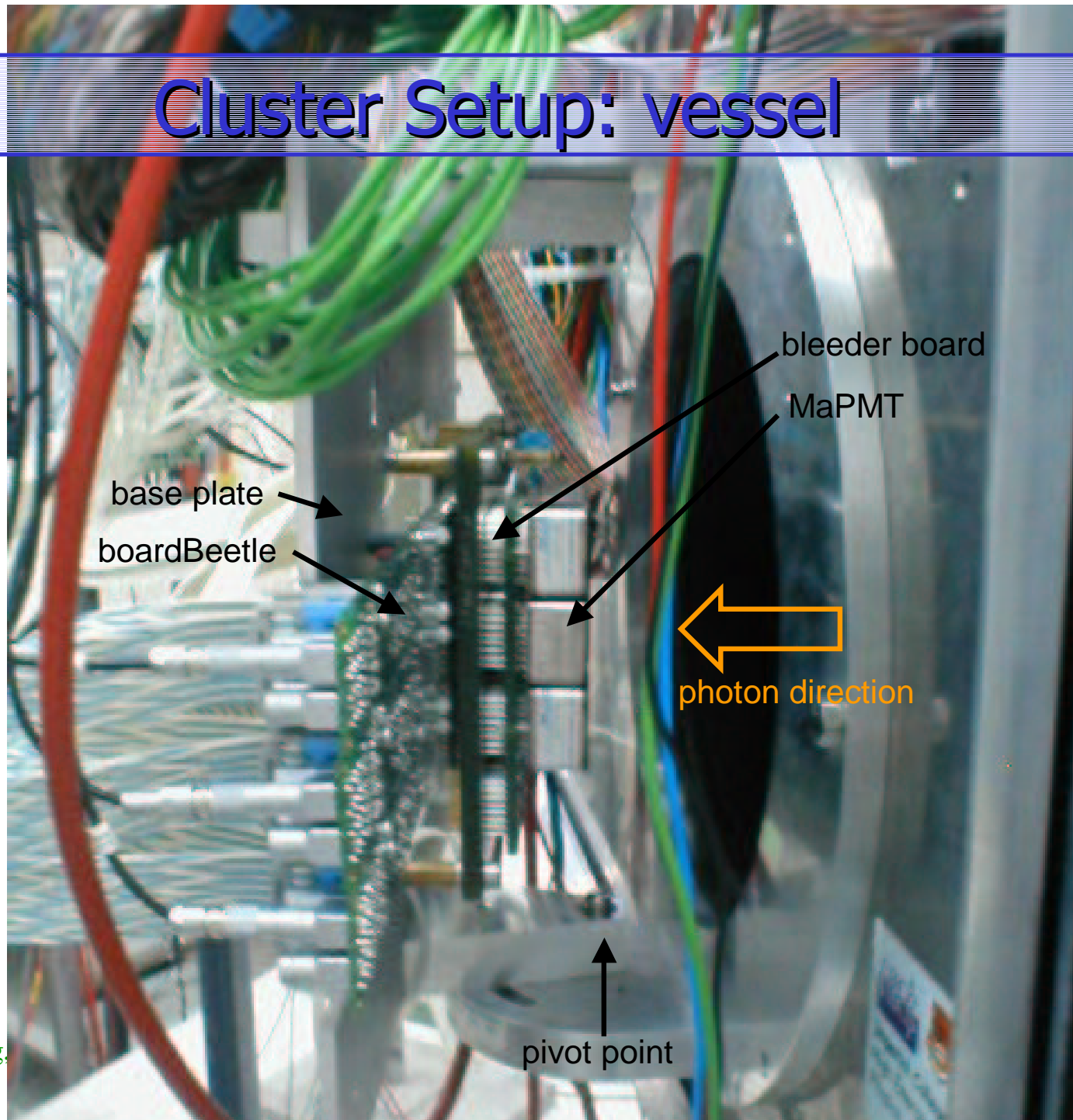


HV point

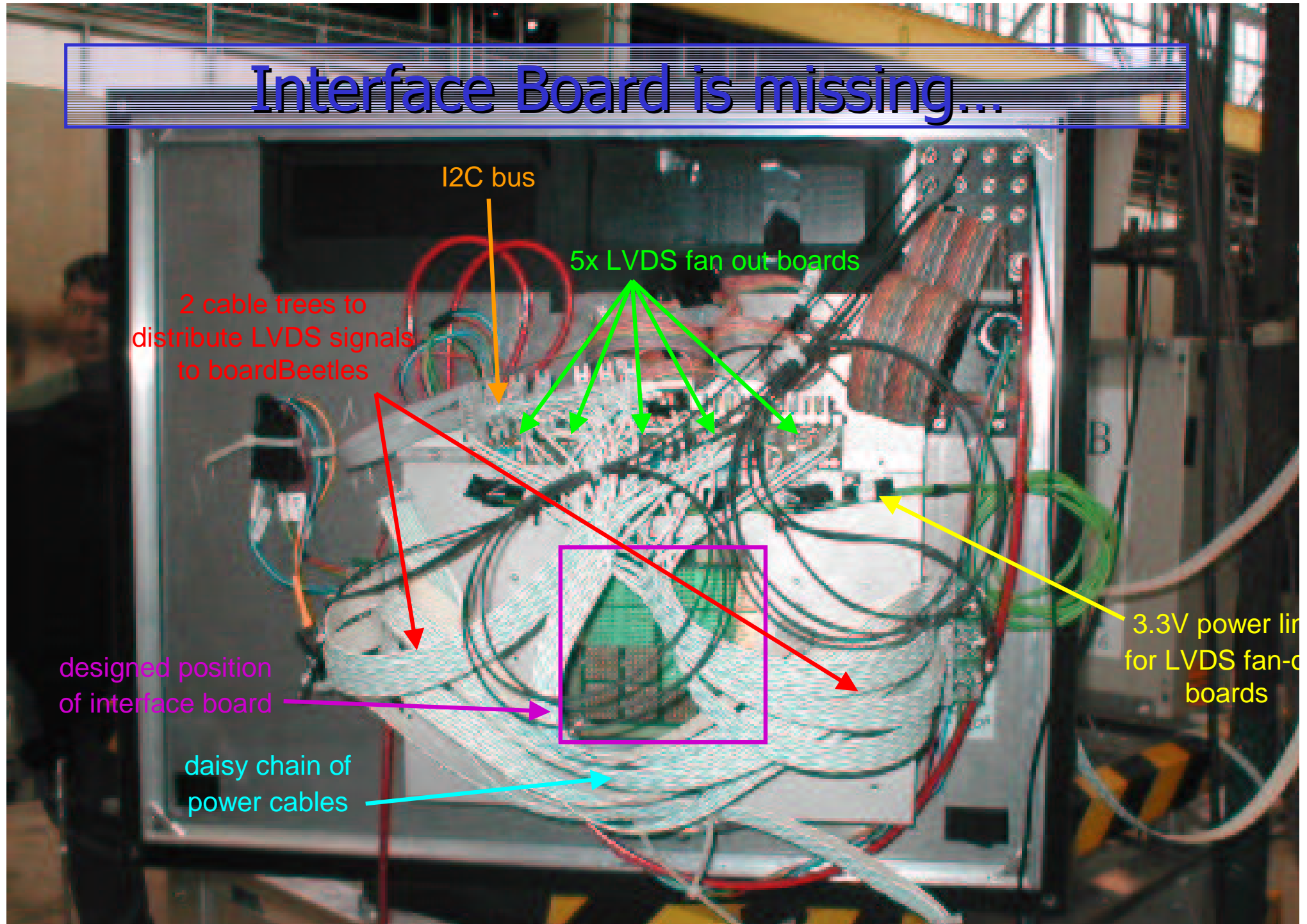
rotation of 4  
bleeder chains



# Cluster Setup: vessel



# Interface Board is missing...



# Prospects of the Near Future

- Mount lenses
- Equip full 9 MaPMT cluster with 8-dynode/Beetle1.2
- Planned measurements:
  - HV scans with Cherenkov and LED light
  - Latency and pulse shape scan
  - Threshold scan with binary readout
- Expect to fix saturation problem of amplifier
- Expect to extend dynamic range in FED
- Hope to get up to 5 boardBeetle with Beetle1.2MA0 early next week to repeat some of the measurements with the second cluster
- In the lab: get interface board and prove functionality
- In the lab: cure I2C problem with cluster
  
- Many thanks to all who made this possible!!!