BCM1-F
Status

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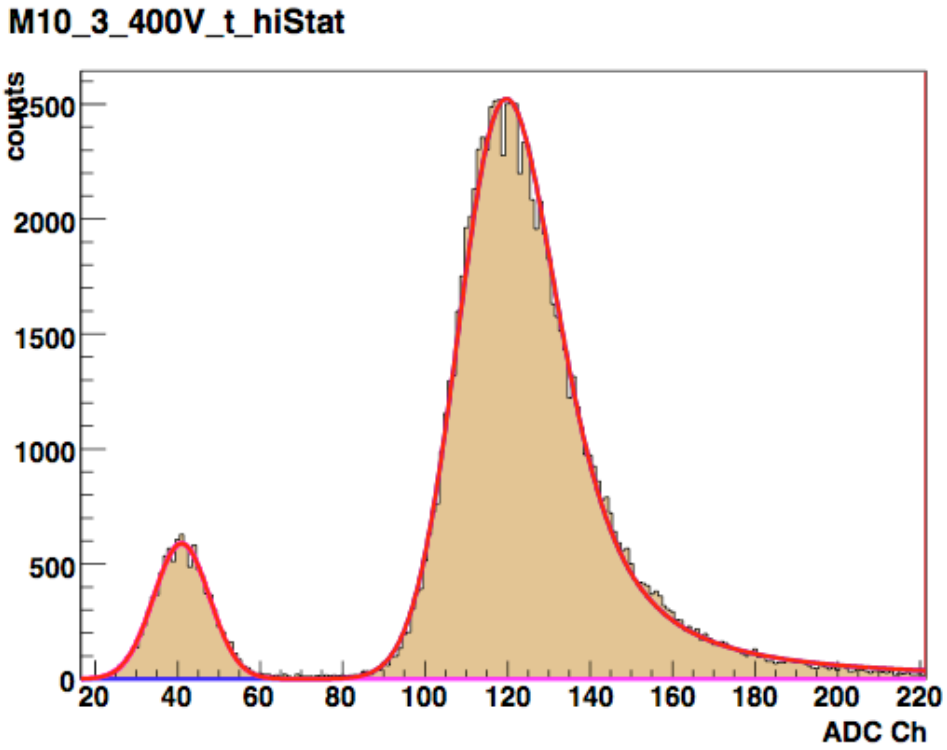
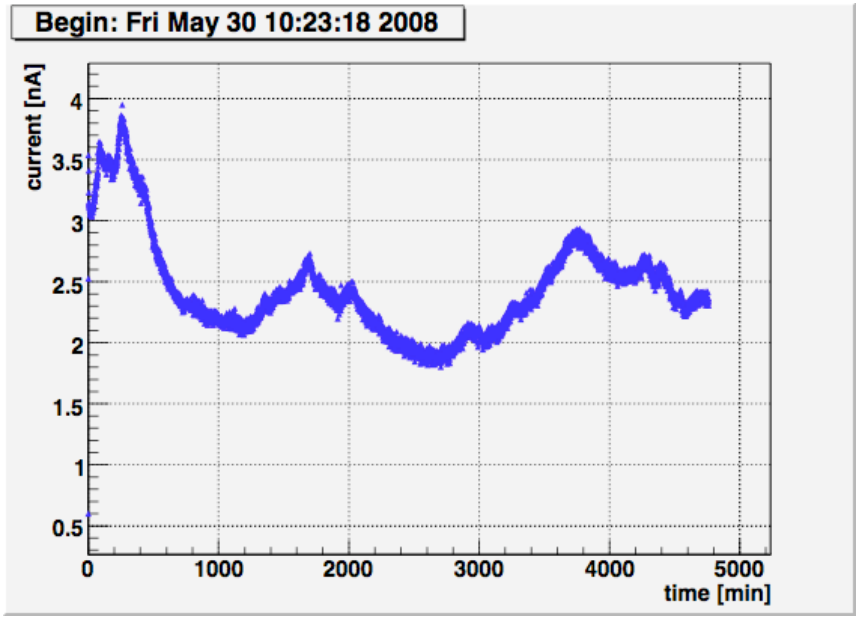
Words and their meanings

- **B**ackground **R**adiation **M**onitoring consists of
  - BCM1-F/L (**B**eam **C**onditions **M**onitor, ***F**ast*/***L**ong term*)
    - 1-L polycrystalline diamond sensors with 1cm^2
    - 1-F singlecrystalline diamond sensors with 0.25 cm^2
  - BSC (**B**eam **S**cintillator **C**ounters)
  - more subdetectors (active and passive devices, here not mentioned)
- Contributions from DESY:
  - Comissioning of BCM1-F (4 detectors on either side of pixels)
  - Measurement (characterization) of (pCVD) diamond sensors for BCM1-L
  - Support for installation of BCM1-F/L, running in
  - Software to read out BCM1-F and to publish data
  - Tools for running and diagnosis (soft- and hardware)

Performance of BCM1-F Module

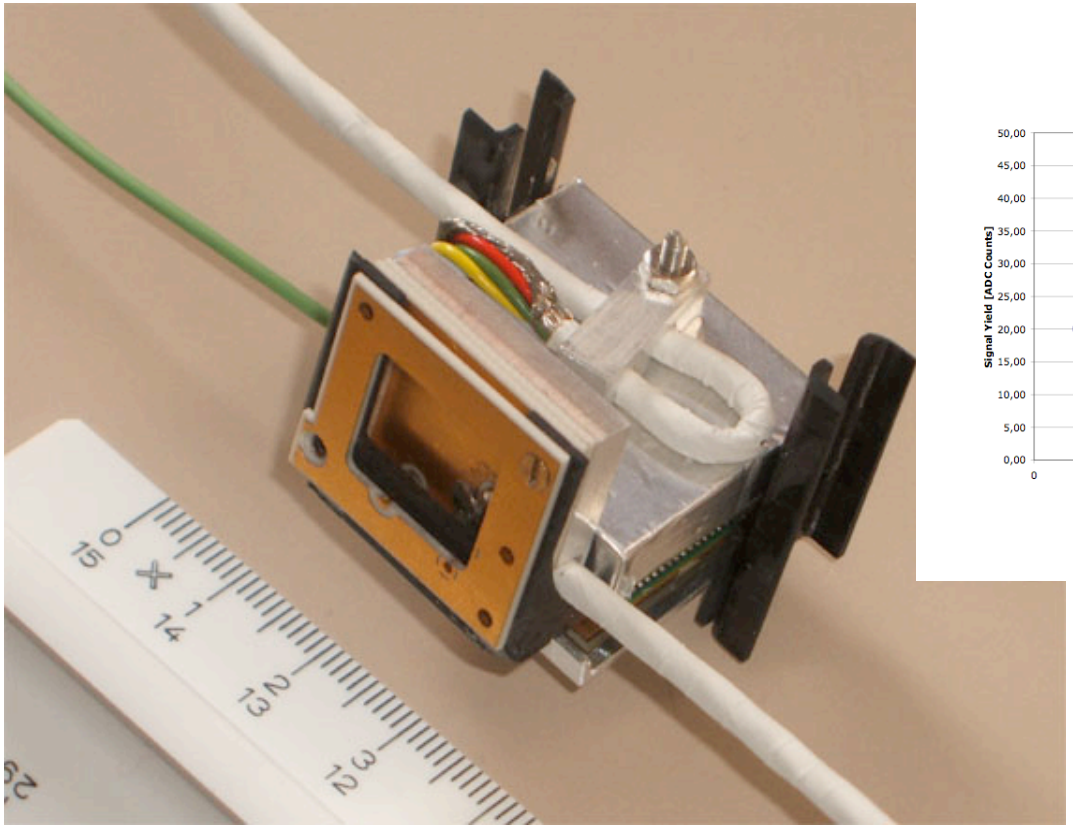
- all modules measured (10 preamp+sensor + 10 opto-hybrids)
  - readout CMS-like with fibres
  - measurement with pulses and ^{90}Sr source
  - measurement of current consumption and leakage currents

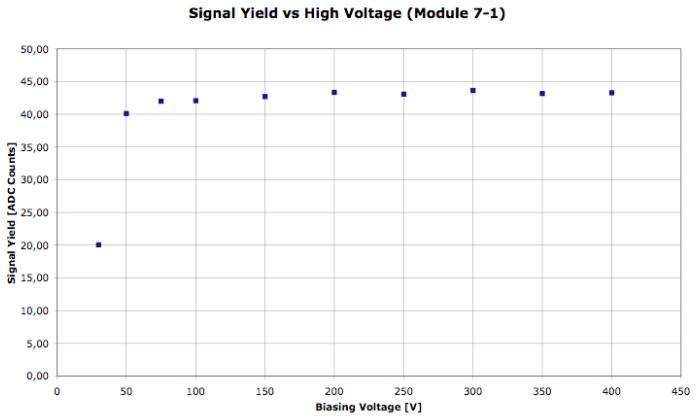




BCM1-F/L Module (L-shape)

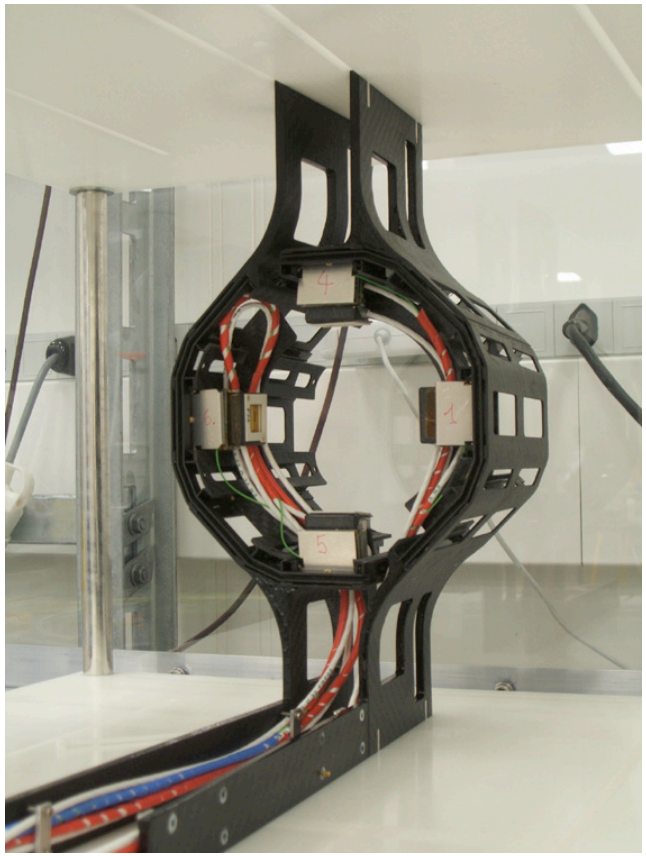
- all L-shapes with modules are mounted (currently 8+1)
  - BCM1-F with diamond, preamp, cable and screening hoods
  - analog optohybrid (AOH) with mono mode fibre
  - encapsulated diamond sensor of BCM1-L

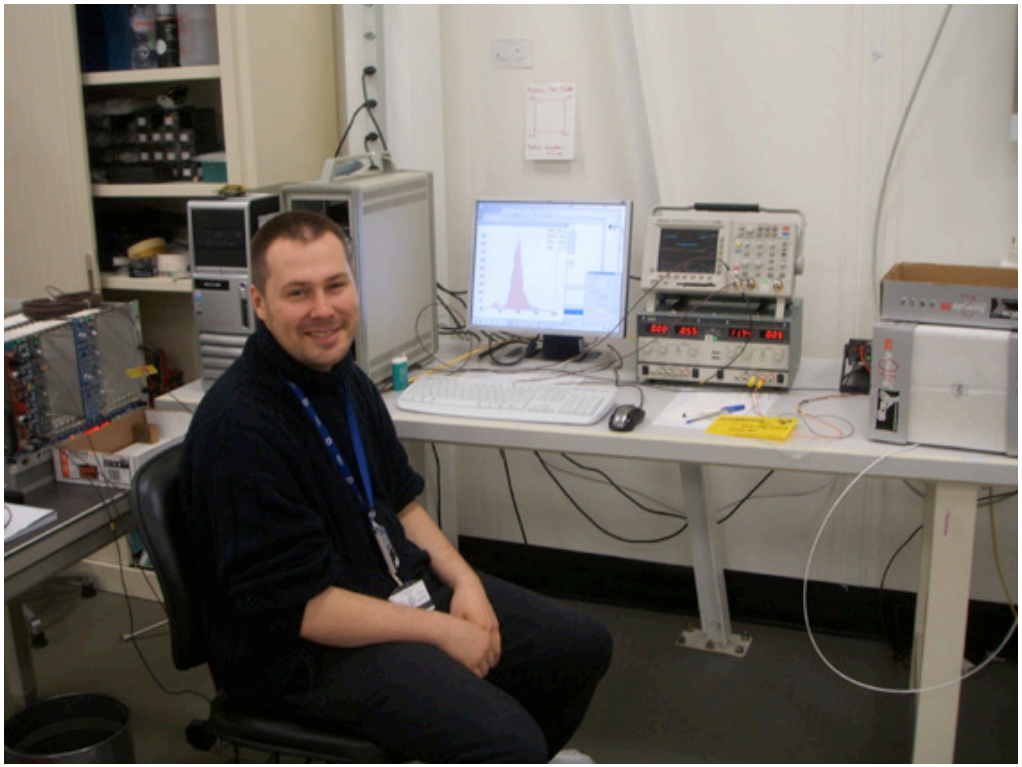




Mounting and Testing

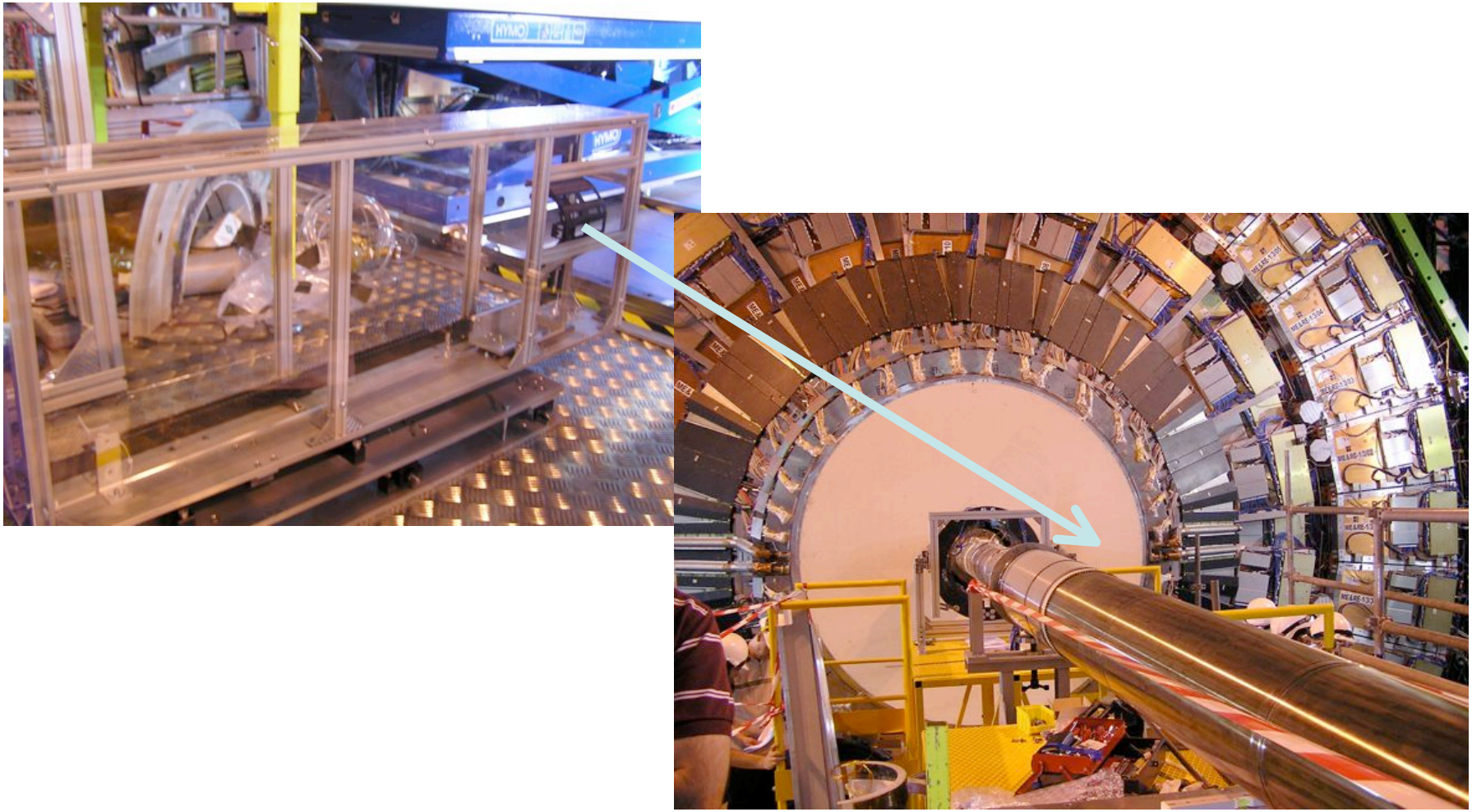
- Assembled modules mounted onto carriages and tested again
- CMS like environment (power supplies, cables, distributions)





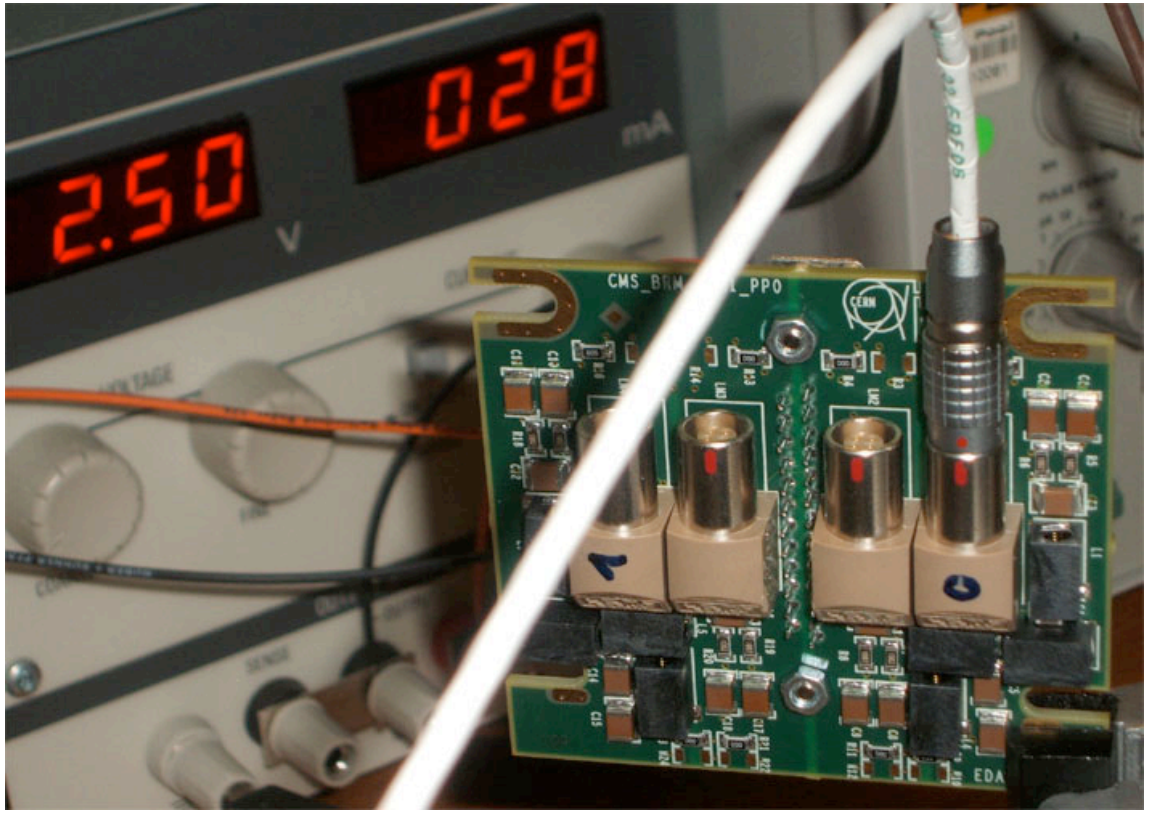
Mounting in CMS

- Carriage -> Installation Cassette -> final position in CMS



Patch panel 0

- Patch Panels assembled and tested: each has 2 BCM1-F/L channels
  - generation of test puls ok (both polarities visible)
  - power distribution ok (HV, LV)
  - HV and LV filters ok



Status of readout

- use of Optobahn receiver module
- signal distribution electrically
  - either use of charge sensitive (integrating) ADC -> spectra
  - or **use of sampling ADC** (2ns period -> 500 Ms/s) -> **CMS**
- sampling method with signal processing gives comparable results
- sampling ADC read out via optical link (PCI card inside PC)
- dump as binary data to the local disk, see also “software”
  -> interface to CMS “under construction”, publish & subscribe
- investigation of TDC planned, integration into readout planned

Summary and outlook

- BCM1-F frontends needed a very careful mounting (~3h each)
- no general problems known currently
- cross check BCM1-F with BCM1-L done -> ok
- ready to install into CMS (end of June ???)