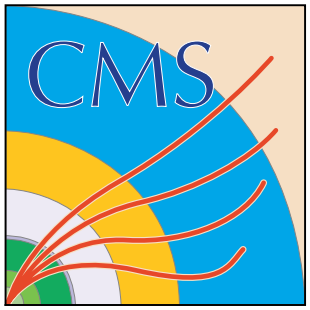
News on Phase-2 Activities



Andreas Mussgiller

CMS Tracker Upgrade Phase-2 Meeting
26/10/2012

HELMHOLTZ ASSOCIATION

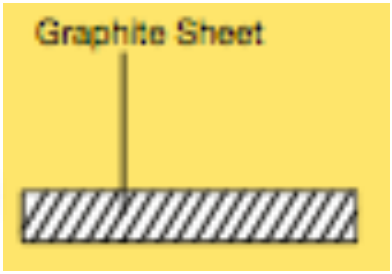
DESY

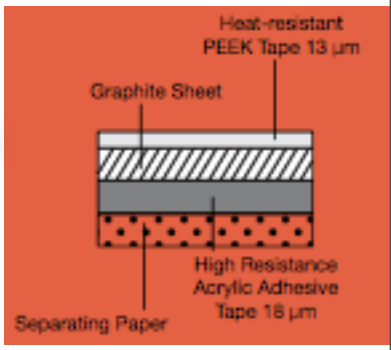
Outline

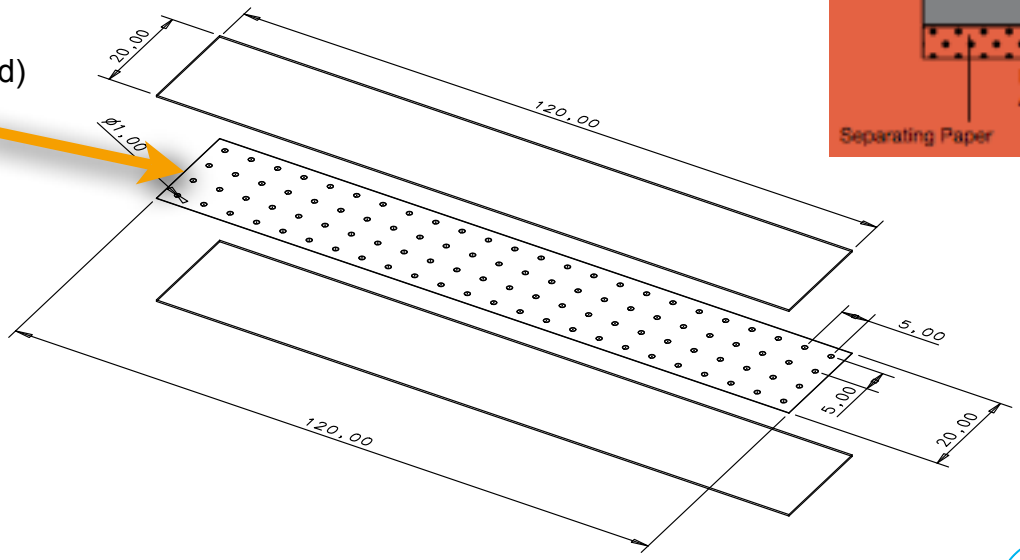
- CFRP-PGS Laminates
- news from the labs

CFRP-PGS Laminates

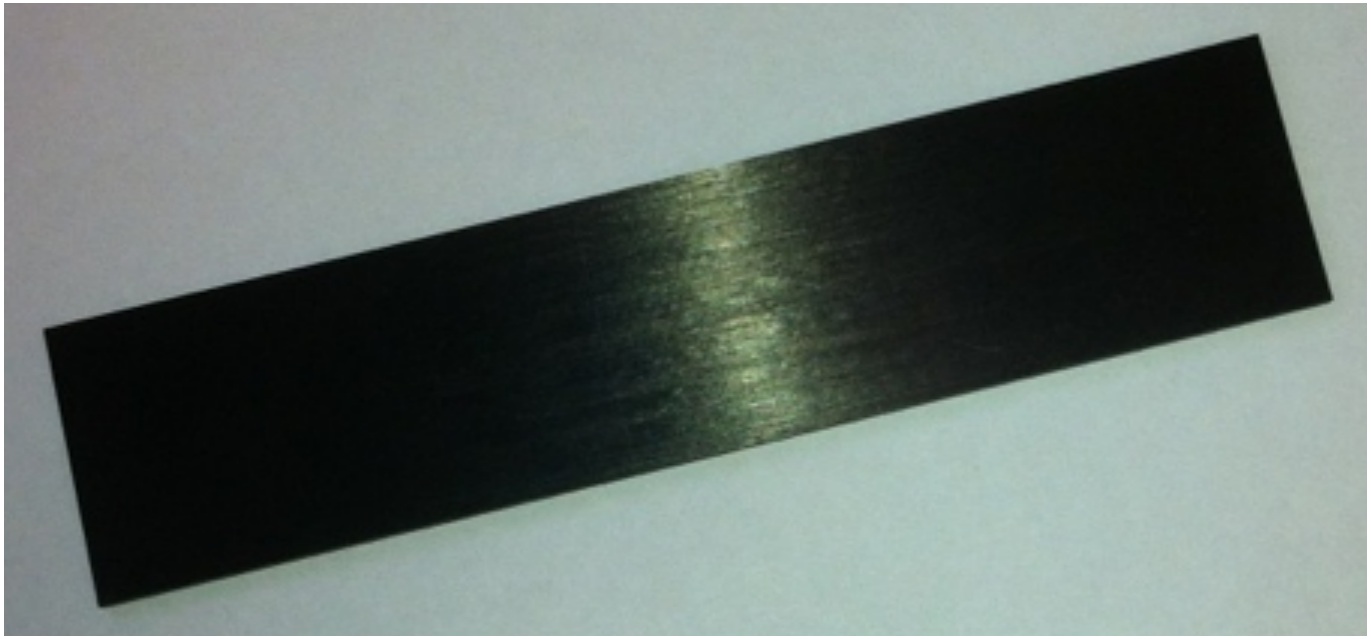
- bondability of PGS (Pyrolytic Graphite Sheet) needs to be tested
- samples were produced at INTA (Madrid)
- samples are 20 x 120 mm^2
- 6 different types of samples
  - 2 types of PGS foil
    - S Type
    - A-RV type
  - 3 PGS foil „shapes“
    - 20 x 120 mm^2 (full)
    - 16 x 116 mm^2 (frame/centered)
    - 20 x 120 mm^2 (perforated)
- 5 samples per type





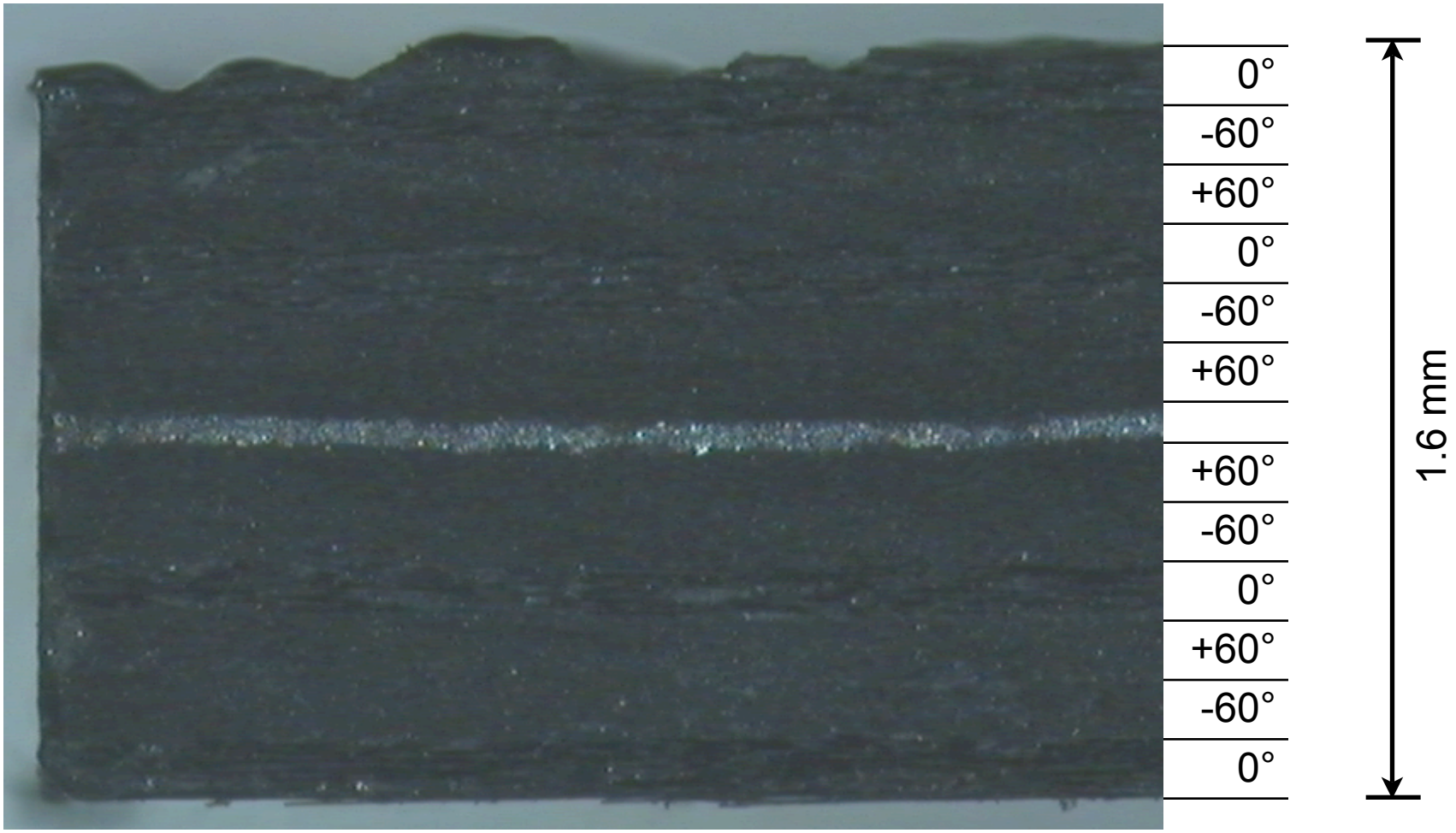


CFRP-PGS Laminates cont.



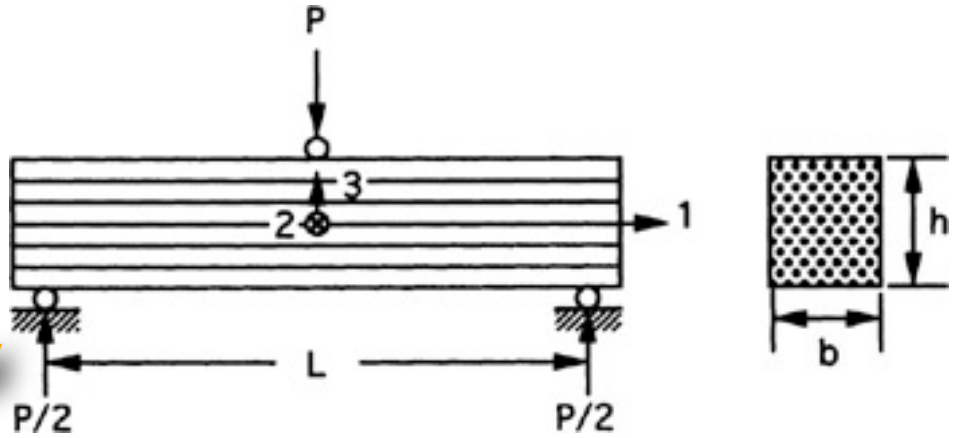
- M55J high-modulus fibre (Toray)
- PGS foil is laminated into the CFRP
  - 125 µm per ply
  - 0° / -60° / +60° / 0° / -60° / +60° / PGS / +60° / -60° / 0° / +60° / -60° / 0°
  - quasi-isotropic CFRP sheets
- 20 additional quasi-isotropic sheets available for own bonding tests
  - 0° / -60° / +60° / +60° / -60° / 0°

S-Type Full

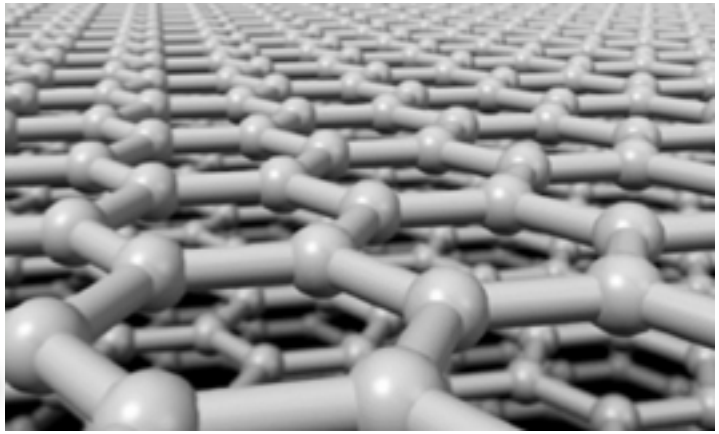


CFRP-PGS Laminates - Planned Tests

- confirm thermal conductivity
  - effect of perforation



- measure interlaminar shear stress
  - where does bond break
  - interface between CFRP and PGS
  - inside PGS



- how does radiation effect interlaminar shear stress

News from Lab 2

- slight rearrangement of equipment
  - now complies to D5 regulations

News from Lab 2 cont.

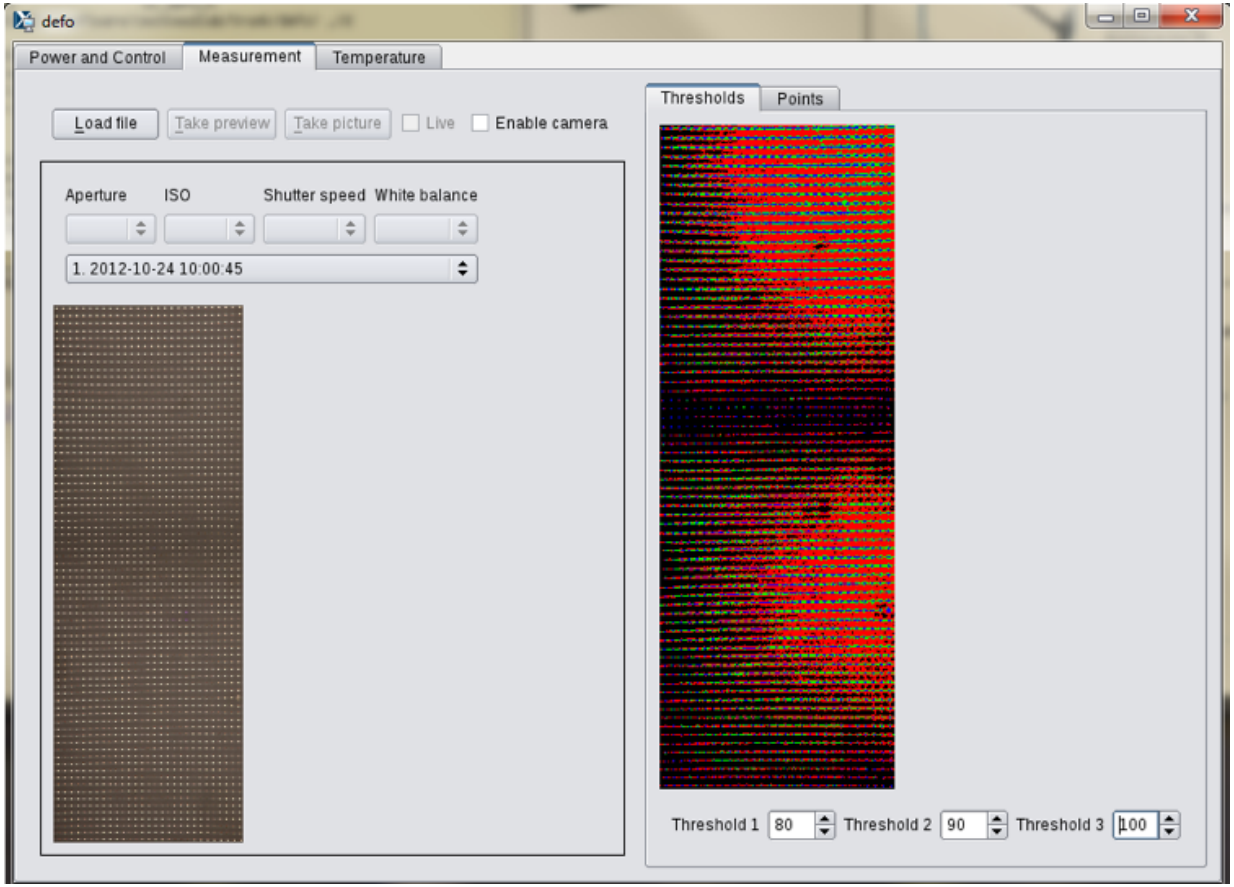
coolant distribution

- new vacuum pump system directly connected to vessel
- chiller currently shared between vessel and ODM
- additional chiller will be ordered for microchannel cooling activities
  - use Julabo chiller for ODM
  - new chiller for all thermal measurements

News from Lab 1

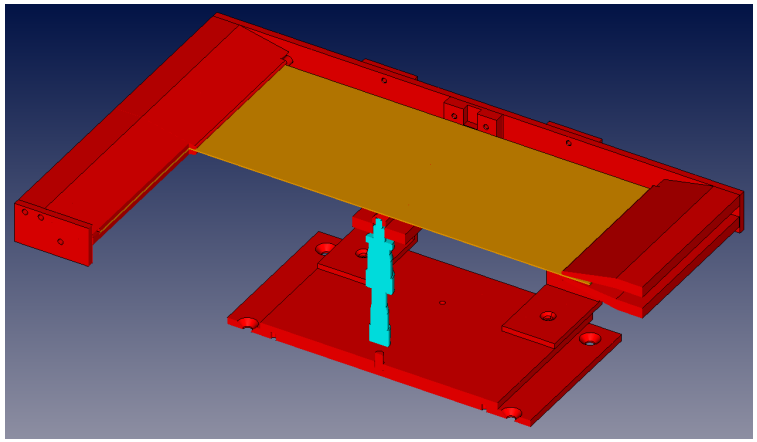
- too much ambient light when all panels are switched on
  - housing will be covered with black foil from the inside
- dry air supply is working
- first tests with dry air planned once setup closed and sealed
- linear drives for camera and light panel frames yet to come

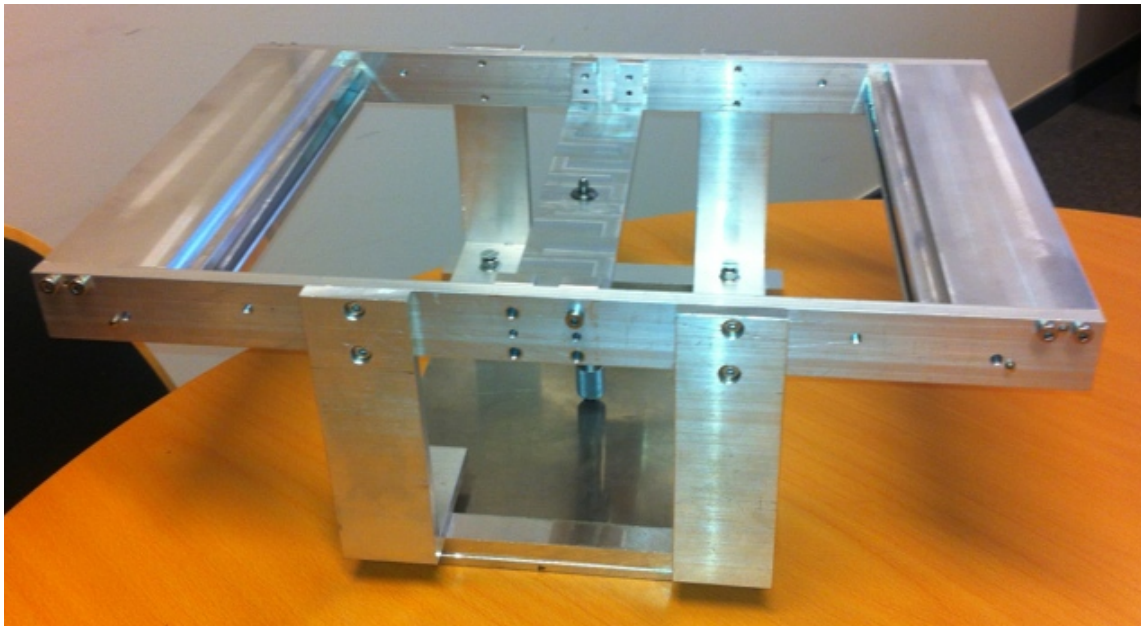
News from Lab 1



- complete restructuring of software
- scriptable
- split measurement and analysis parts into two codes

ODM Calibration Device





- some minor modifications wrt. 3D model were needed
- precision thread for micrometer screw is tilted
  - should be fixed by end of next week
- new calibration surfaces are available
- first measurements with laser measurement system at FEC beginning of November

Summary

- samples for PGS bonding tests are available
  - thermals tests will start once Lab 2 equipment is commissioned
- a lot of progress over the last few months
  - many thanks to Carsten Muhl, Adam Zuber, Holger Maser, Karten Gadow, Korbinian Pöppel, Sven Junck and Sander Vanheule
- idea to split coolant supply for thermal measurements and ODM
- dry air supply is ready
  - first measurements planned for early November
- calibration device for ODM almost ready
  - calibration of the calibration device planned for early November
- ODM software needs to be finished
  - need all hardware in place for this