Status Forward Endcap EMC

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APD Submodule Manufacturing

- Submodule manufacturing and shipping proceeding (shipping 5 modules/2 weeks to Bonn, manufacturing frequency a little higher)

- 65 (of 193) APD submodules built so far (glued)

- 46 submodules shipped to Bonn for cosmics tests

- Transport to Jülich not yet started (restricted acces from end of last year on), foreseen to start March 26.

- Several new students now involved in submodule manufacturing
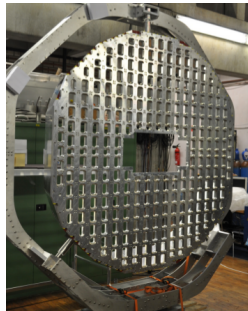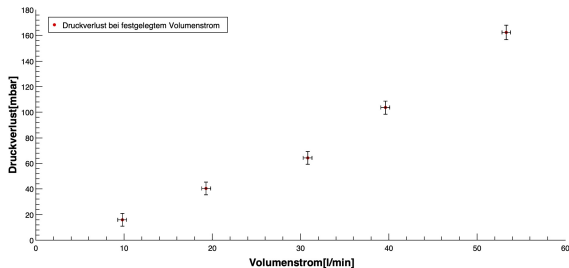
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APD Screening

- APD screening ongoing regularly

  - Currently still in weekend mode (one shift a day)

- Current numbers:

  - Screened - irradiated - screened: 19500 - 66 % of whole target calorimeter

  - Matched (on demand): 4000
    (80+ FWEC APD submodules plus complete BWEC)

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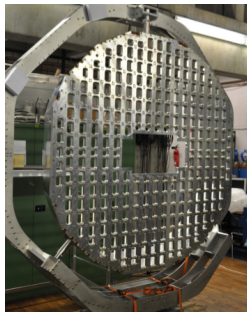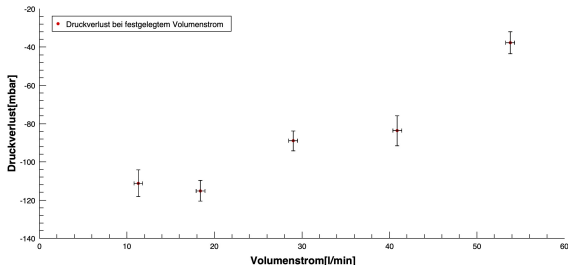# Cooling: Pressure Drop Measurements (Lower) U-Turns

- Pressure drop as a function of flow

- U-turns: In- and outlet (manometers) at same height (dynamical pressure drop only)
- Simulation: 5 mbar pressure drop at 4 l/min ($\Delta T = 1$ K)
- Lowest reliably measureable flow: 10 l/min
- Extrapolation (plot): about 4 mbar pressure drop at 4 l/min

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Cooling: Pressure Drop Measurements Backplane Side
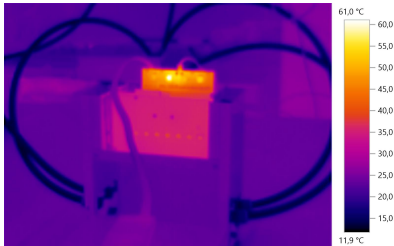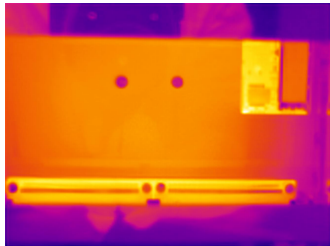
- Pressure drop as a function of flow

- U-turns: manometers at different heights ($\Delta h = 1.3$ m)
- Simulation: 25 mbar dynamical pressure drop at 18 l/min ($\Delta T = 1$ K)
- Plot: -116($\pm$ 5) + 130 mbar = 14 ($\pm$ 5) mbar pressure drop at 18 l/min
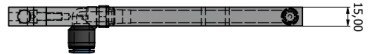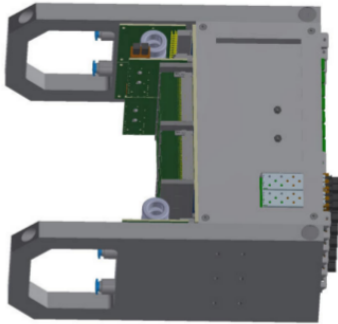
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SADC Crates

- Thermal coupling of heat dissipating components by silicon foam heat transfer pads to aluminum plates on top and bottom
- Thermal images taken with blackened aluminum plates (in order to prevent reflection)
- No hot-spots on aluminum plates
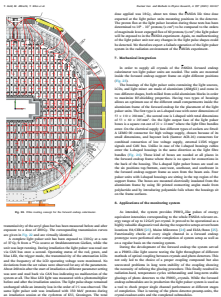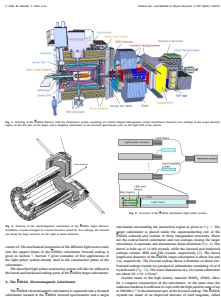- Internal temperature readout of FPGA: 45(55) $^\circ$C, safe!

SADC Crates

- Cooling flanges covering SADC boards and power supplies
- Complete thermal test of crates (6- and 15-SADC crates)
- Tests with simple cooling line routing
  (also sufficient for full load?)

Thomas Held   **Status Forward Endcap EMC**

Light Pulser Paper

- ## NIM A paper about $\overline{\text{P}}$ANDA light pulser system published

- ## Free access until April, 21st:
  ## https://authors.elsevier.com/a/1cgA7cPqbhDyc

Summary

- Construction of Forward Endcap proceeds (medium speed)

- Production of submodules:

  - 65 APD submodules so far (about a third of the total number of APD modules)
  - Bochum U regulations yet unchanged: Students allowed to work (picking of APD sets, building submodules)
  - Transport of submodules to Jülich starting end of March

- Work progress may increase as Covid-19 regulations change, though

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