Electronics

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PANDA Collaboration Meeting
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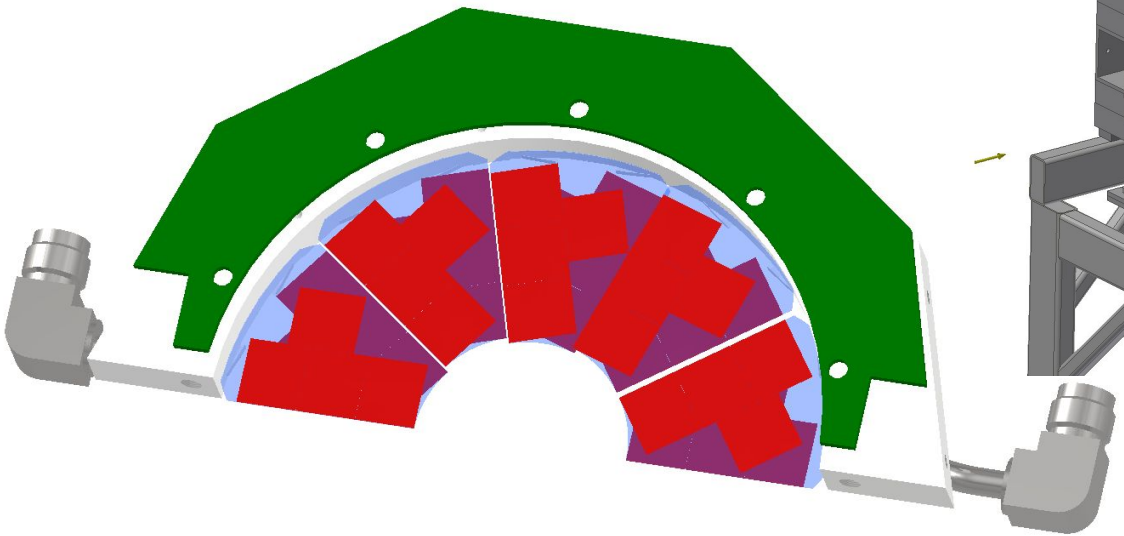
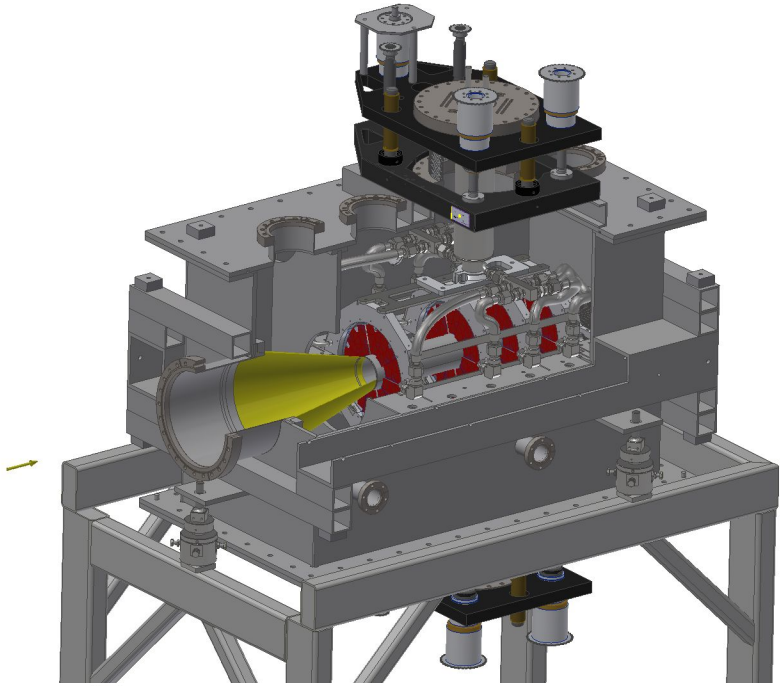
HIM
Helmholtz-Institut Mainz

Signal Routing

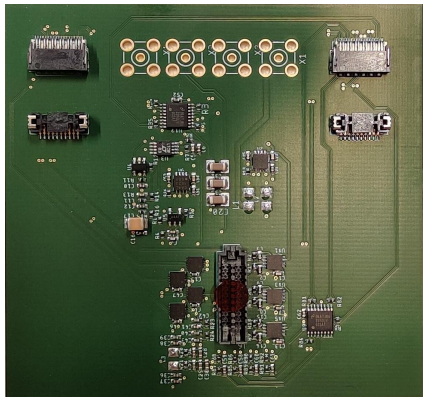
- Aluflex cables
- Support PCB
- Rigid flex cables
- Patch panel

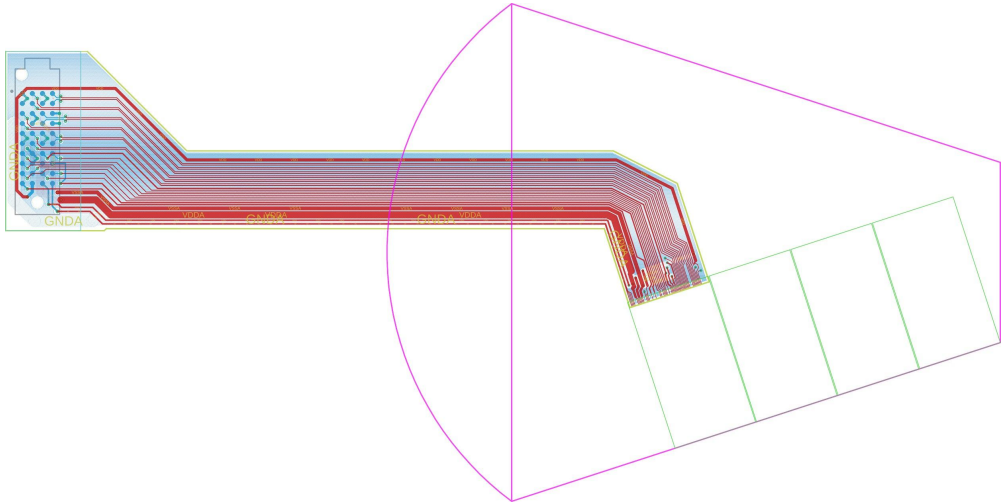




Aluflex Cable (MuPix8)

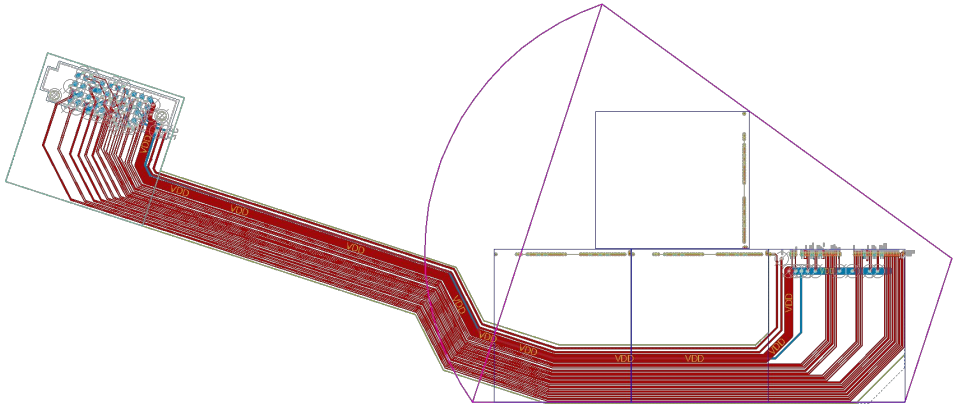
- Design for the 4 MuPix8 ready last year
- Produced and delivered end of last year by LTU
- One cable for every MuPix
  - easier to bond
  - easier to handle
- Flex part of the cable are bonded in Bochum to the PCB





Aluflex Cable (MuPix10)

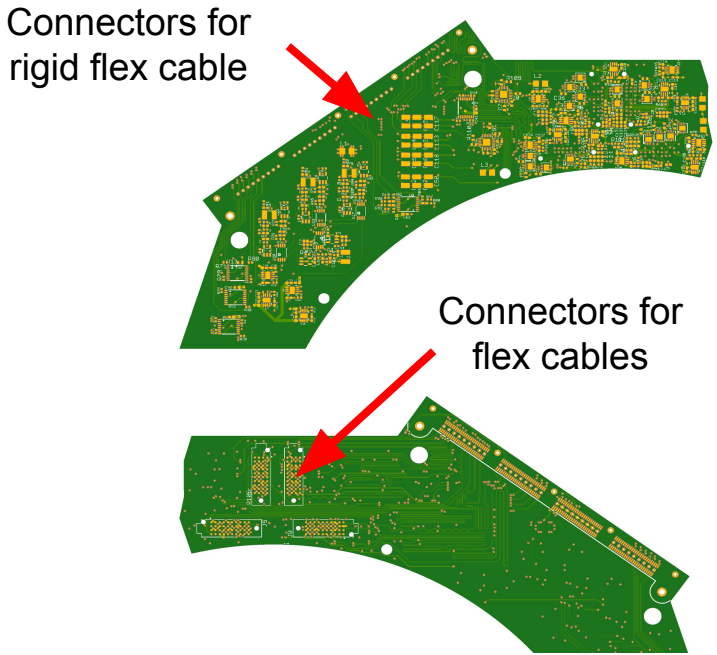
- Design of the Aluflex cables for the MuPix10 started this year
  - LTU will again produce the cables
  - Discussion with LTU started
- Difference to MuPix8
  - Only one low voltage
  - Only one GND
  - Control lines changed



- Bond pad difference between MuPix10 and MuPix11:
  - HV pad will be moved ~50 µm
  - Different control lines will be used
- Same cable for MuPix11?

Electronics

- Single sensor PCB produced and delivered to Bochum
- Prototype PCB (MuPix8) for support electronics on the half plane designed
  - Additional electronics compared to final detector
  - Start of production after successful tests of single sensor PCB
- New rigid flex cables for the connection to the outside arrived in Mainz
  - 60 cm long
  - 35 differential pairs
  - 4 HV (60 V) lines



60 cm rigid flex cable

Radiation Hardness Test

- Expected radiation dose: < 0.1 kGy for high luminosity mode
- Tests at COSY in Jülich (Sep. 2019 and May 2021)
- Beam intensities between 10^6 and 10^8 p/s

type	part number	# tested	# broken
September 2019 at COSY (2.8 GeV, ~ 10^{13} protons, ~ 150 Gy)			
LDO regulator	MCP1727-18	35	0
	MCP1727:ADJ	45	0
May 2021 at COSY (2.8 GeV, ~ 10^{12} protons, ~ 15 Gy)			
LVDS repeater	DS25BR100	45	1
Clock driver	ADCLK846	20	0