

# Frontend Interface

## Summarize

## Aim

- Discuss electrical and mechanical issues of the very frontend: the interfaces between sensor/readout chip/backend transmission & HV supply/control.
- Define standards for prototypes, based on available technologies.

## Results (1) - Readout/Fanout from sensor

- **state of the art fine pitch pcb will do**  
(100...200 $\mu$ m for current few channel FE chips)
- **matters of crosstalk & capacitive load**  
(under investigation)
- **wire bonding or bump bonding to pads**  
(needs ~ 3mm gap between absorber tiles;  
conductive glueing also discussed)
- **wire bonding to FE chip**

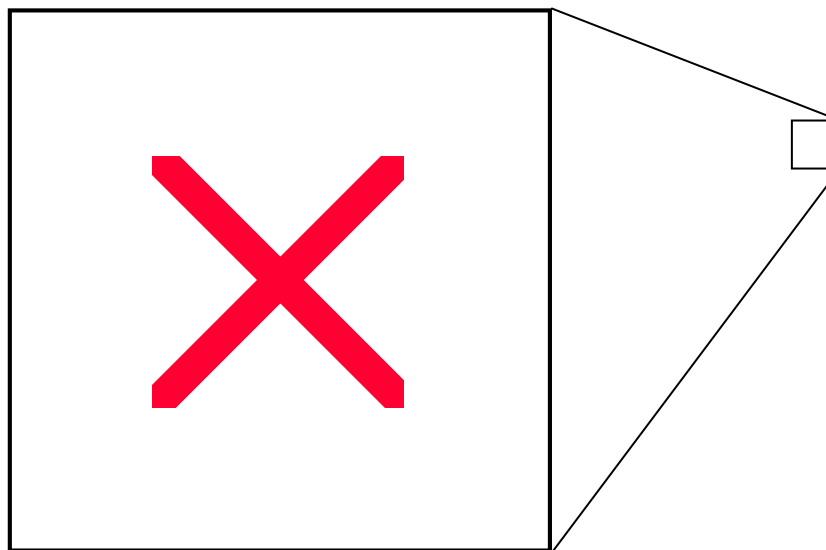
## Template of a readout structure

flex pcb, 128 channels

wire bonded to sensor pads

(Zeuthen)

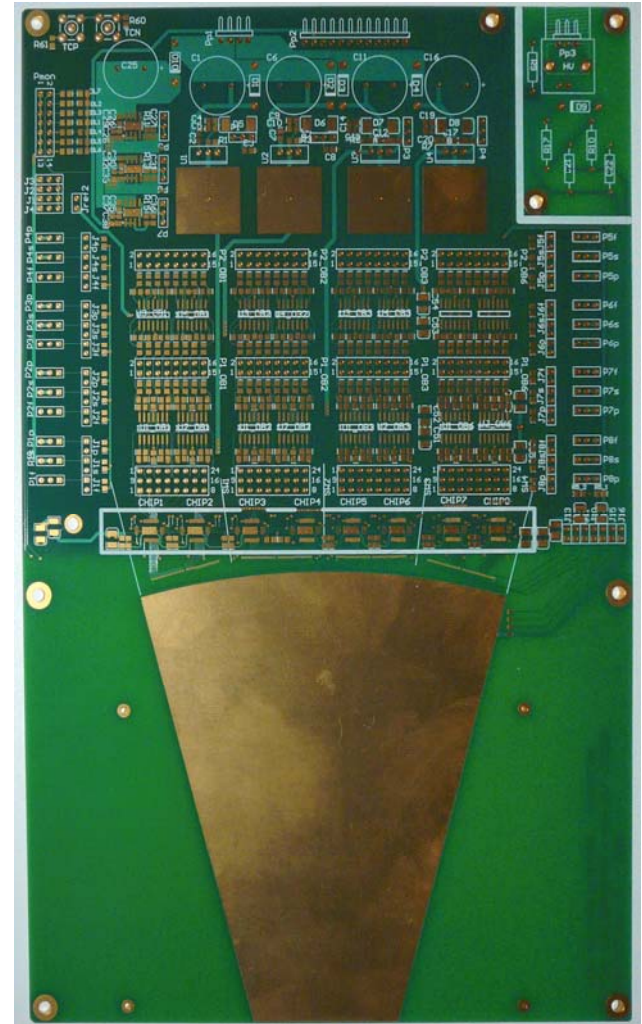
used for crosstalk tests



## Template of an integrated readout board

pcb + flex readout, 2x32 channels  
wire bonded to sensor pads  
(Krakow)

will be ready in October



## Results (2) - Transmission to DAQ

- **backend connection**

(NO solution recommended since none of the *available* FE chips offers digital transmission)

- **repeater/multiplexer**

(two possible locations:

- immediately upstream of the detector
- approx. 6m upstream inside the support tube)

- **technology**

(twisted pairs to repeater, optical further up;  
*current*: coaxial to multichannel ADC)

## Results (3) - Mechanics

- **alignment**  
(*initial* alignment: 500µm overall)
- **precision**  
(knowledge about *actual* position: 100µm)
- **support**  
(FE chip has to be cooled, forces of cabling have to be compensated)