Monolithic Active Strip Sensors for Applications in future Tracking detectors & medical Imaging (WP1.1.1)

Tracking at large radius → moderate spatial resolution sufficient (~10 µm) ➔ Monolithic active strip sensors (MASS)

- Large area available per channel → lower power density, potential for increased in-strip functionality
- Simple power and data distribution (per area, wrt multiple pixel chips)
- Simple production of modules → reduce production time for full detector
- No flex on sensor → smaller CTE mismatch → mechanical stability (see ITk strip module cracking)
- Bonus: Possible application in medical physics

Collaboration so far: Bonn, DESY, Dortmund (FH & TU), Freiburg

Status:

- Stitching of strip sensors demonstrated to work
- Only partially funded so far

Technology: Aiming at LFoundry 150 nm (known process), open for LFoundry 110 nm

Next steps:

- Demonstrate monolithic analogue readout at large input capacitance
- No stitching, no long strips (use dummy capacitance or bond to existing passive strip sensors)

Open for collaboration, esp. ASIC design