



PH-DT
Detector Technologies

PH-DT-DD Section Meeting

November 27, 2015

P. Riedler

Activities

- ALICE ITS upgrade until LS2
- Pixel R&D for future detectors with special emphasis on CMOS pixels

ALICE ITS upgrade

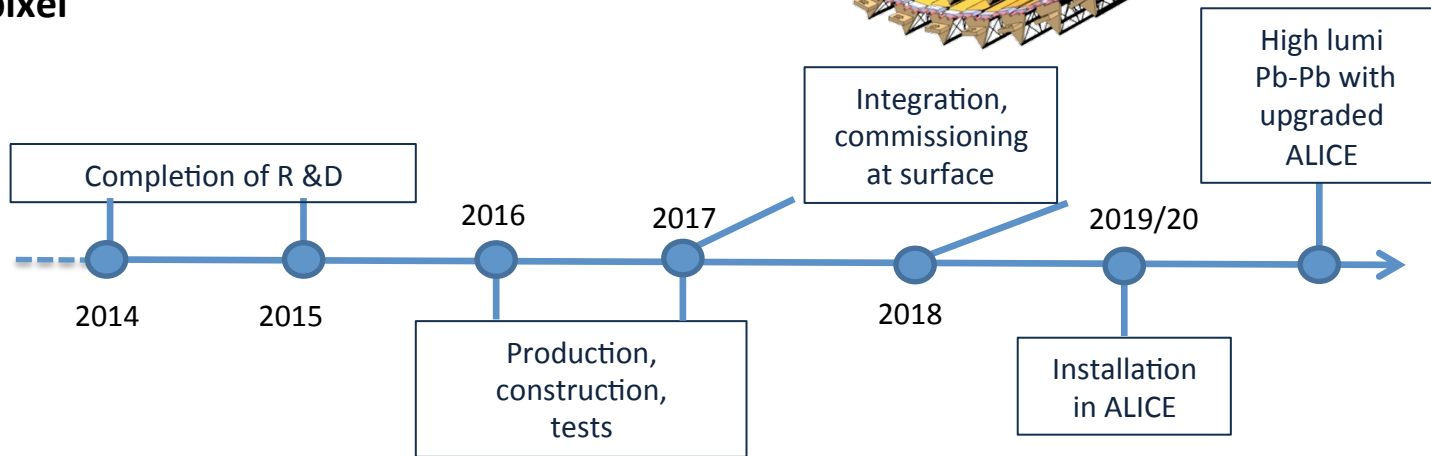
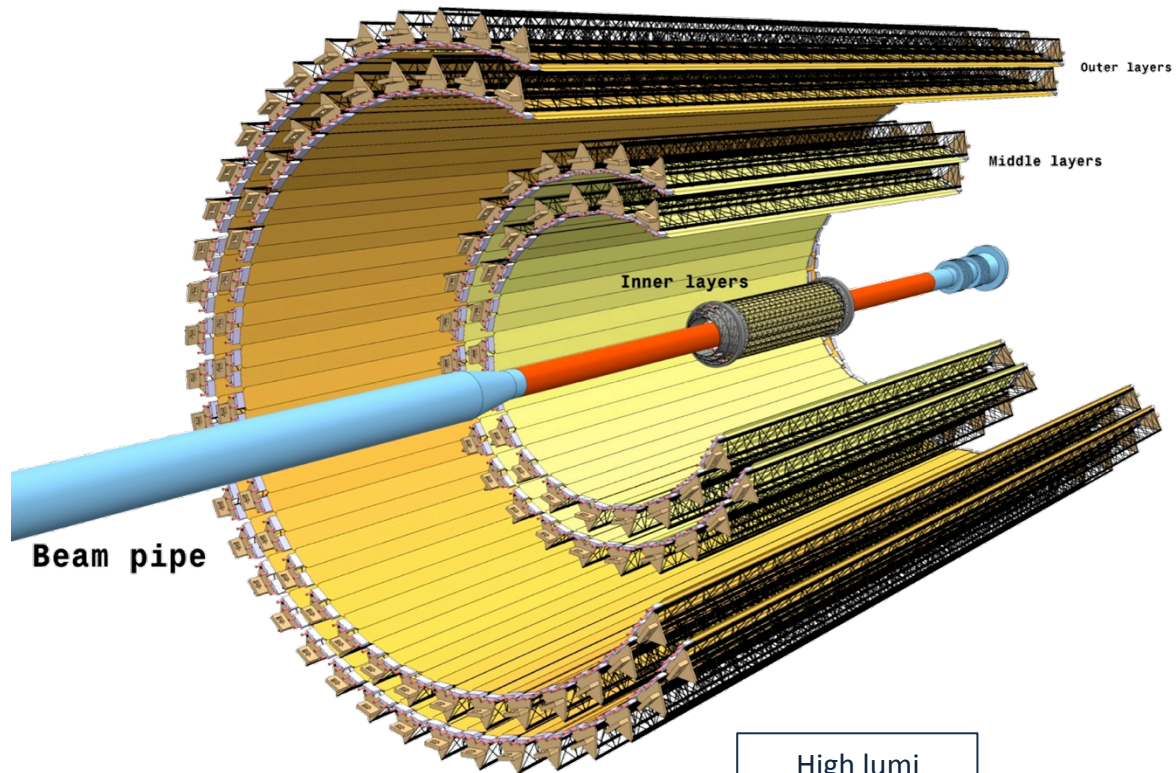
7 layers based on Monolithic Active Pixel Sensors (MAPS)

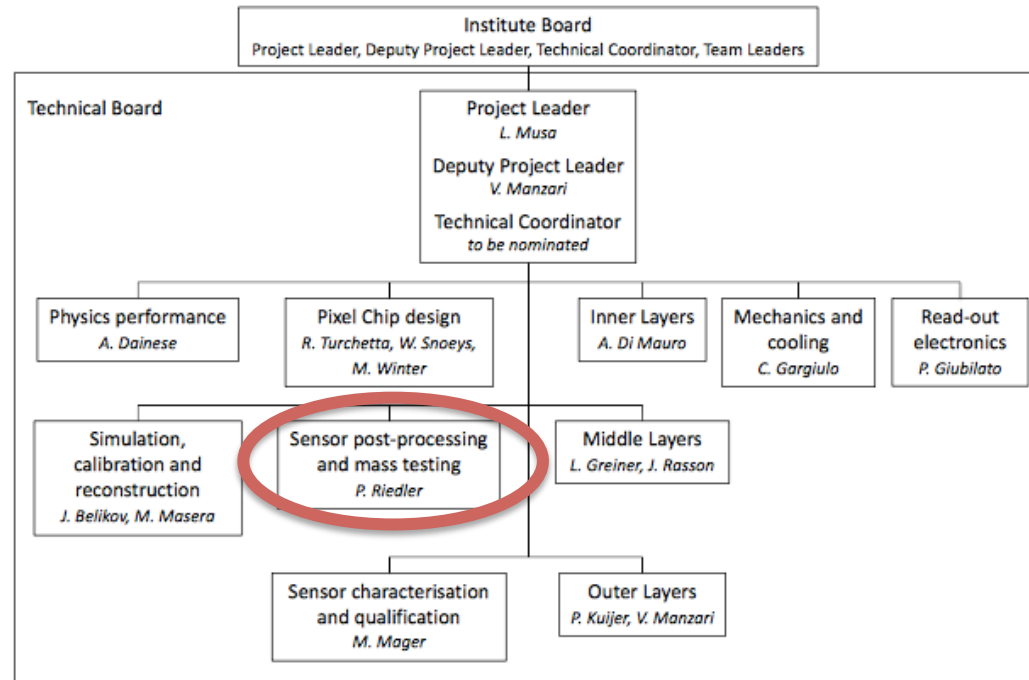
3 Inner Barrel layers (IB)
4 Outer Barrel layers (OB)

η coverage $|\eta| \leq 1.22$
for tracks from 90% most
luminous region

$\sim 10 \text{ m}^2$

12.5 G pixel



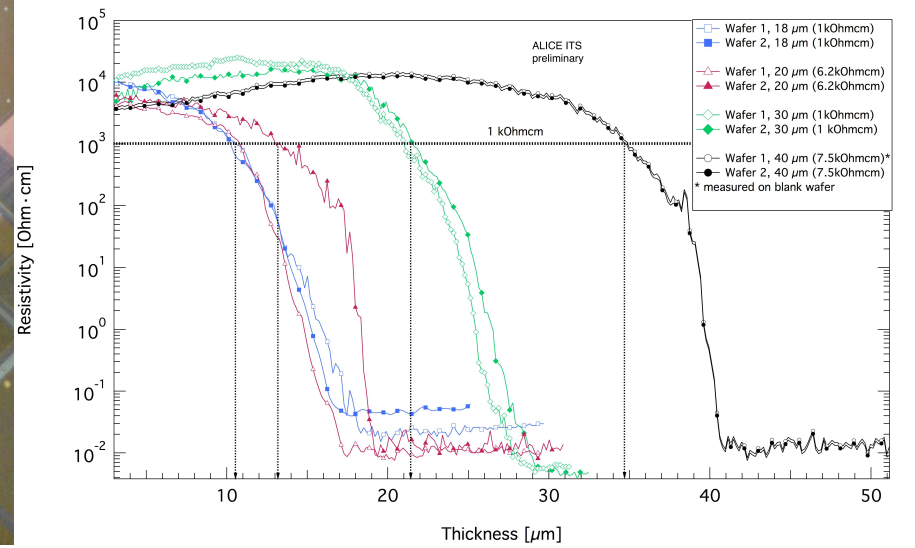
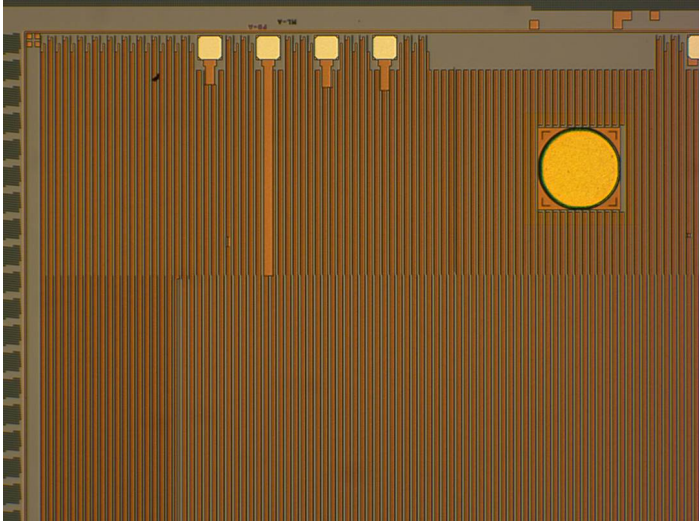
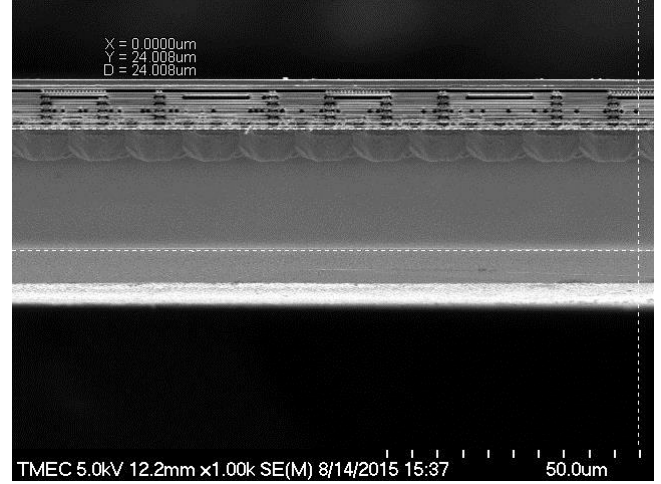
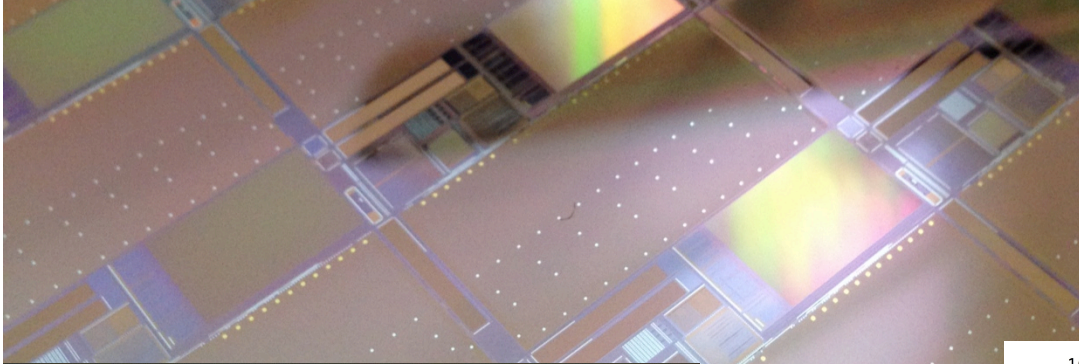
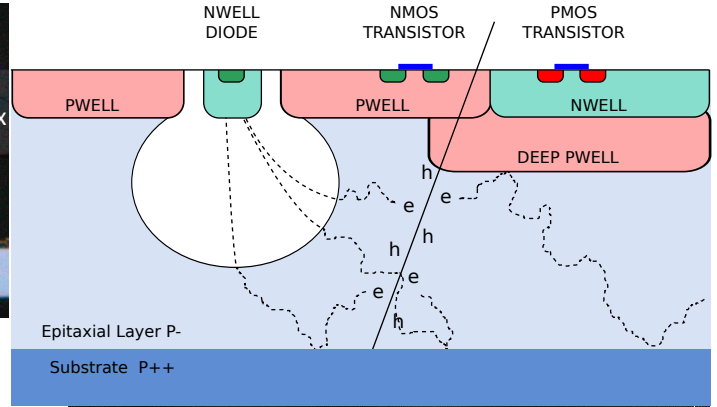
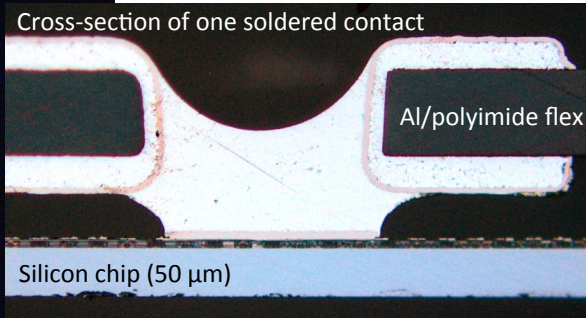
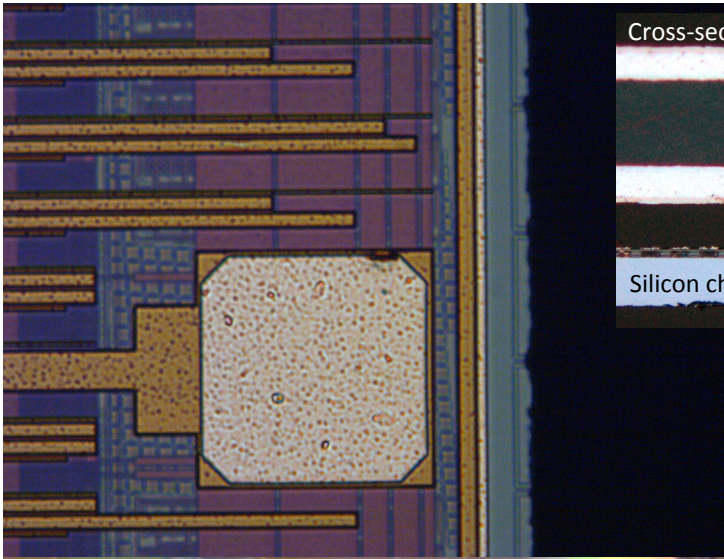


ALICE ITS upgrade

Workpackage 4:

Collaborating institutes in Europe, Asia and US

- CMOS sensor production (incl. special starting material procurement)
- QA measurements on wafers and sensors
- Mass test of sensors (>60.000)
- Post processing of wafers (plating, thinning, dicing, packaging)
- R&D on interconnect



ALICE ITS upgrade – WP4 activities status

Main activities at the moment:

- Preparation for pre-production run at **CMOS foundry** (scheduled Feb. 2016) - last run before the final production - and preparation for production run; procurement of production wafers and QA at partner institute
- Mass-test: machine under construction (first ready in January); test and preparation for sample tests at CERN
- **Thinning and dicing**: finalizing evaluation of different suppliers with final edge layout of CMOS chips – qualification of pick&place suppliers

Production is going to start mid 2016!

Pixel sensor and systems

Start activities on silicon pixel sensor and system R&D – **profiting from the existing expertise in DD!**

Immediate activities:

STREAM ESR will become available next year to work on characterization of new CMOS circuits and evaluation of novel module concepts

STREAM = Smart **S**ensor Technologies and **T**raining for **R**adiation Enhanced **A**pplications and **M**easurements (Marie Curie ITN)

