NA62

Wafer Probing Status

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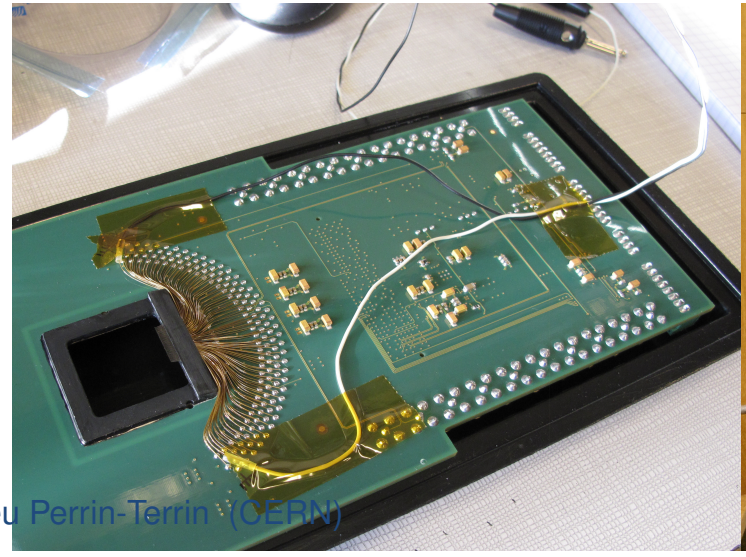
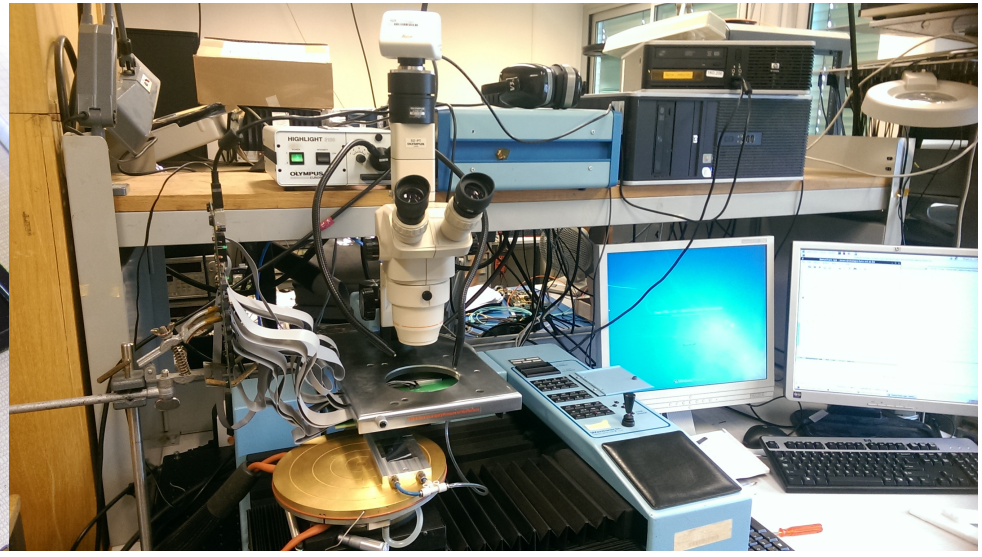
Introduction

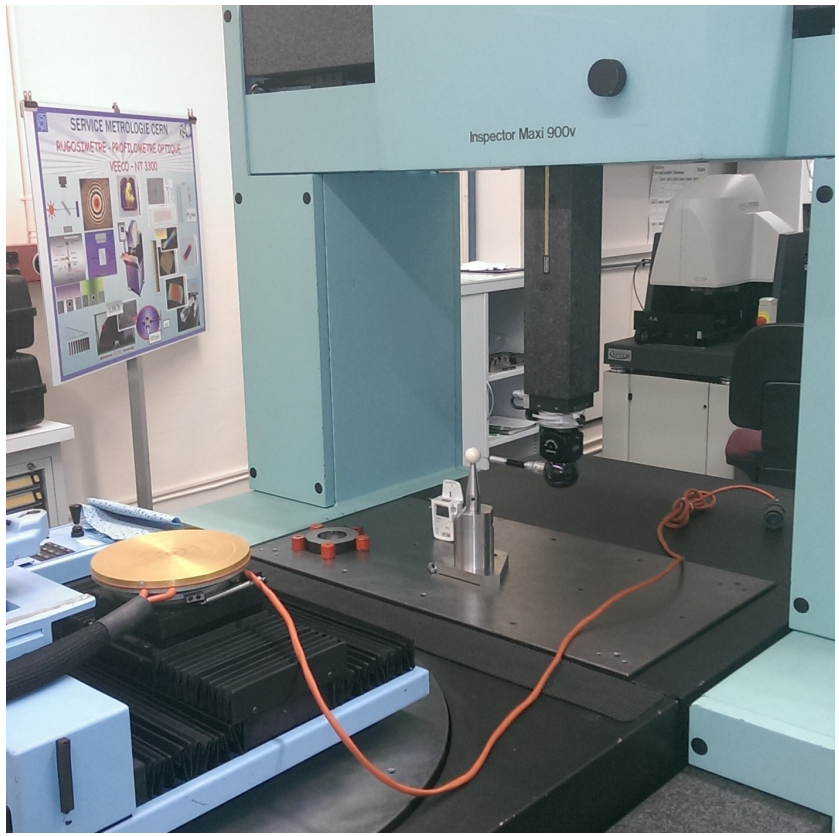
- Need to check which TDCPix chips are working before sending wafer to IZM
- Operation done on the wafer directly
- Test each of the 10 $\times$ 60 chips with a probe card connected via needles
- Critical step for the wafers and chip pads





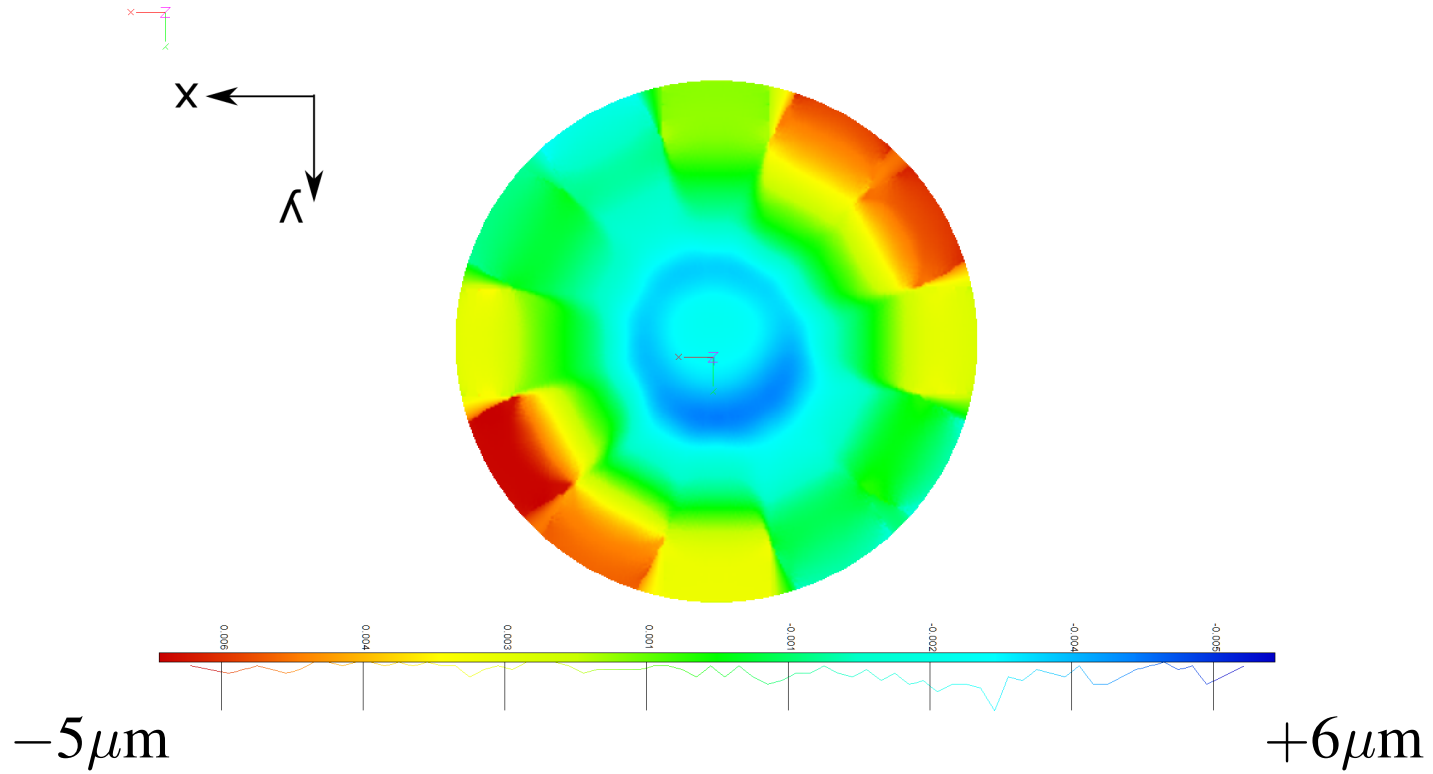
Probing Station: Metrology

- Use a CERN prober equipped with cooling chuck
- Clarify if mechanics is good enough for our use
- Brought prober to the CERN metrology (see talk 10 July)



Metrology Results: it is OK

- Moves not very precise but repeatability excellent (3μm)
- Chuck planarity excellent (11μm peak to peak)



Probing Station

Control Software

- Manual Command is poor and not all functions are accessible
- Use GPIB link to interface prober with PC
- Software implemented, tested and, exercised with daisy chain probe card[1]

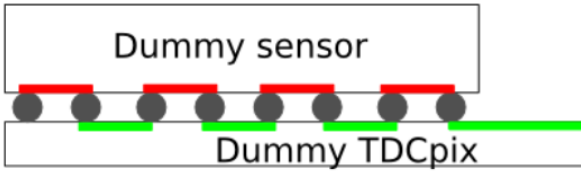
Cooling Chuck

- Some maintenance was needed
- Cooling is now working

[1] Probe card design to check IZM bump-bonding yield

Daisy Chain Measurements

Dummy assembly manufactured with a daisy chain to measure bump-bond status

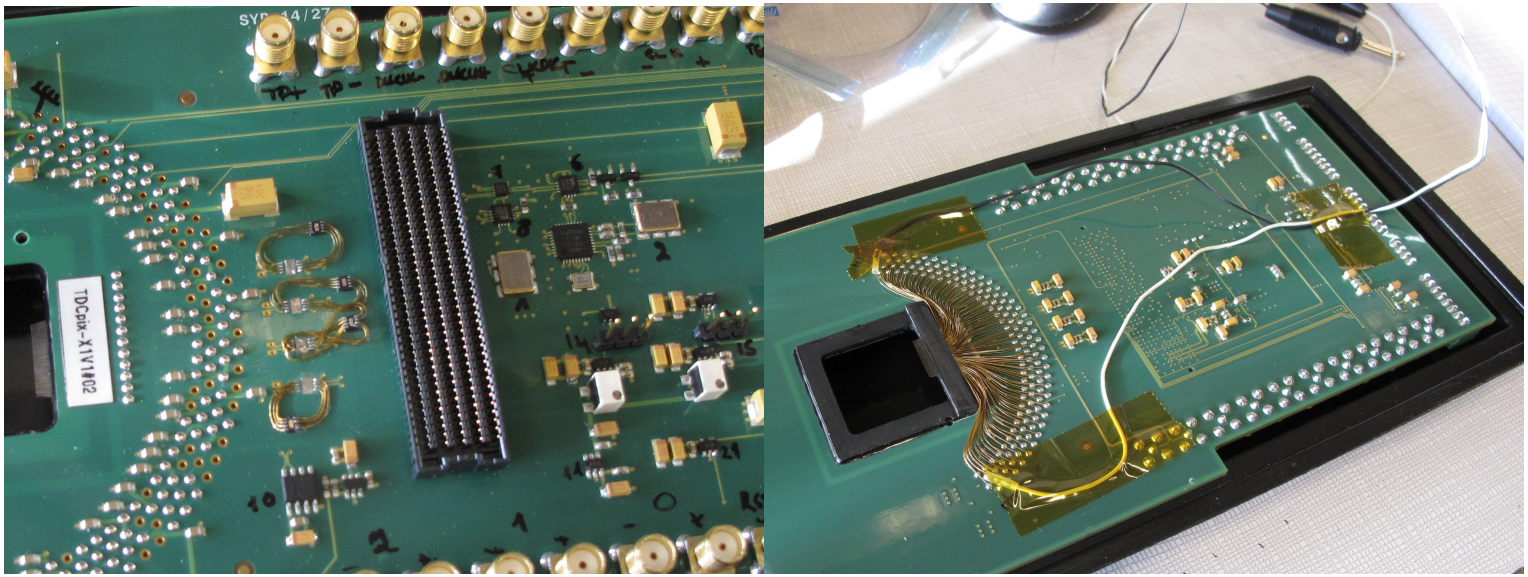


1. Exercise with prober control
2. Measure resistance when needle pressure on pads increases:
   - No variation found
   - But pressure went too far and twisted needles
3. Check bump-bond state after gluing cooling plate
   - Not performed due to 2.
   - Both probe cards sent to Synergie to be repaired

TDCPix Probe Cards

Three probe cards received at CERN

All have the same defect on high speed link:



- Try to fix but it seems to be a waste of time and money
- A new production would be much better (delay? costs?)
- More adequate card support machined at UCL to allow cabling

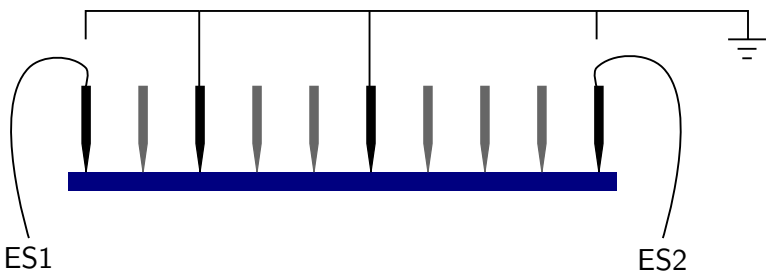
TDCPix Probe Cards, first tests

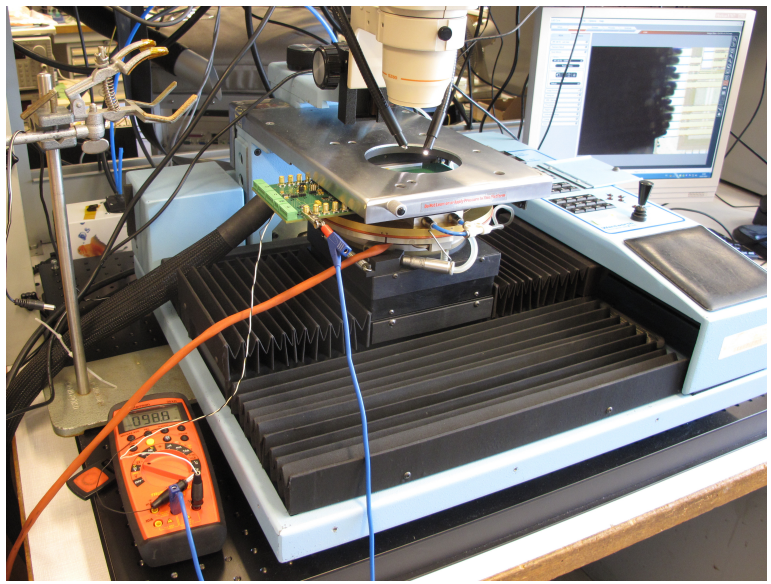
- Power supply control implemented (Bob and Carlos)
- Single chips powered successfully

Channel	Current (mA) at 1V	Current (mA) at 1.3V
Analog	117	178
PLL	81	144
SLVS	6	10
TDC	59	108
Temp	0	0
Digital	134	190

Wafer Prober – Edge Sensor

The Wafer Prober expects a edge sensor to indicate when the needles are in contact with the wafer. Following an idea from Matthew Noy, we emulate one using the ground plane of the chip.





First prototype is working. PCB in fabrication.

Conclusion

- Work is progressing at a pace that allow safety checks and procedures
- New probe card production would be appreciated