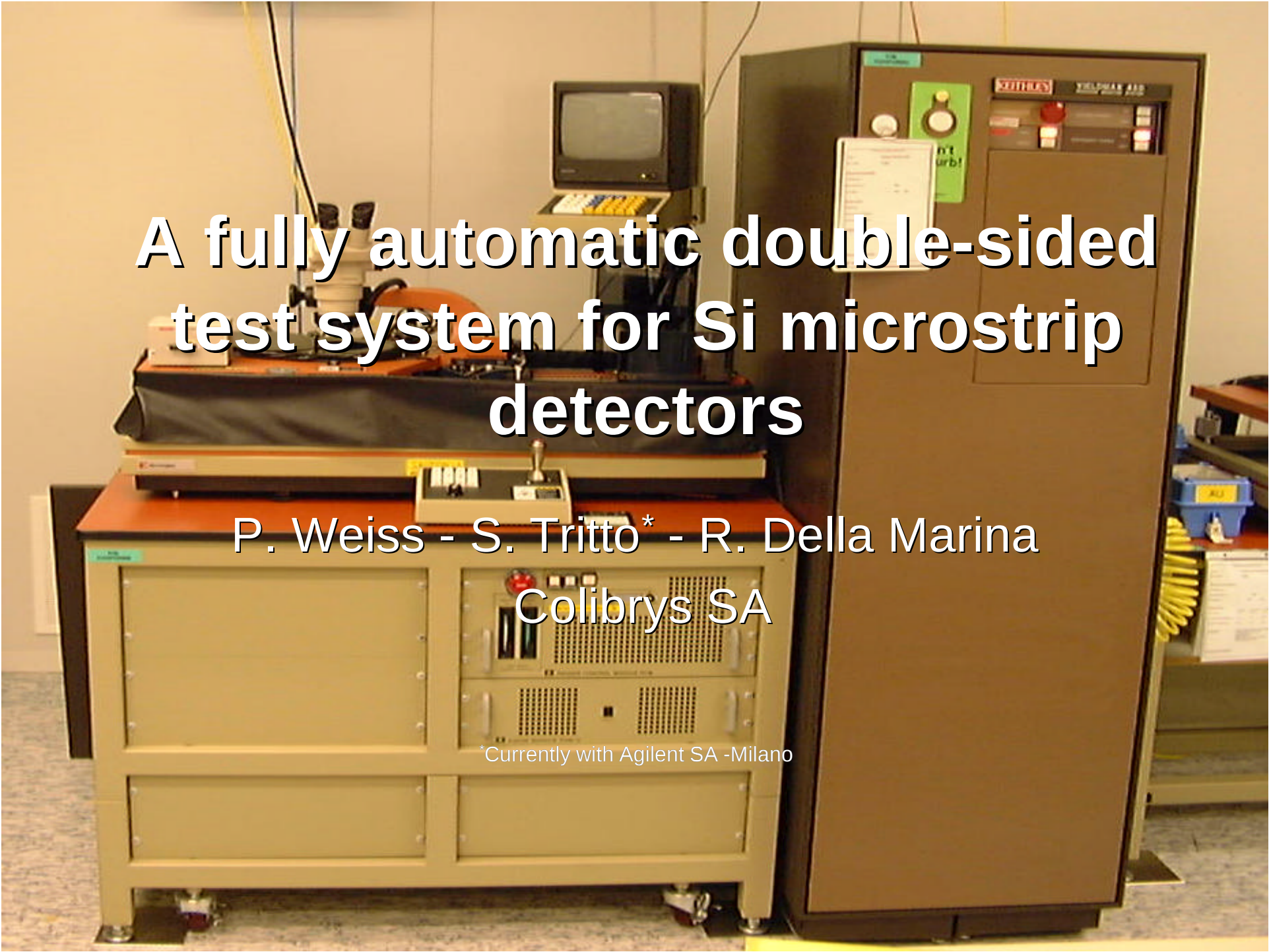




A fully automatic double-sided test system for Si microstrip detectors

P. Weiss - S. Tritto* - R. Della Marina
Colibrys SA

*Currently with Agilent SA -Milano

Requirements for Industrial Testing

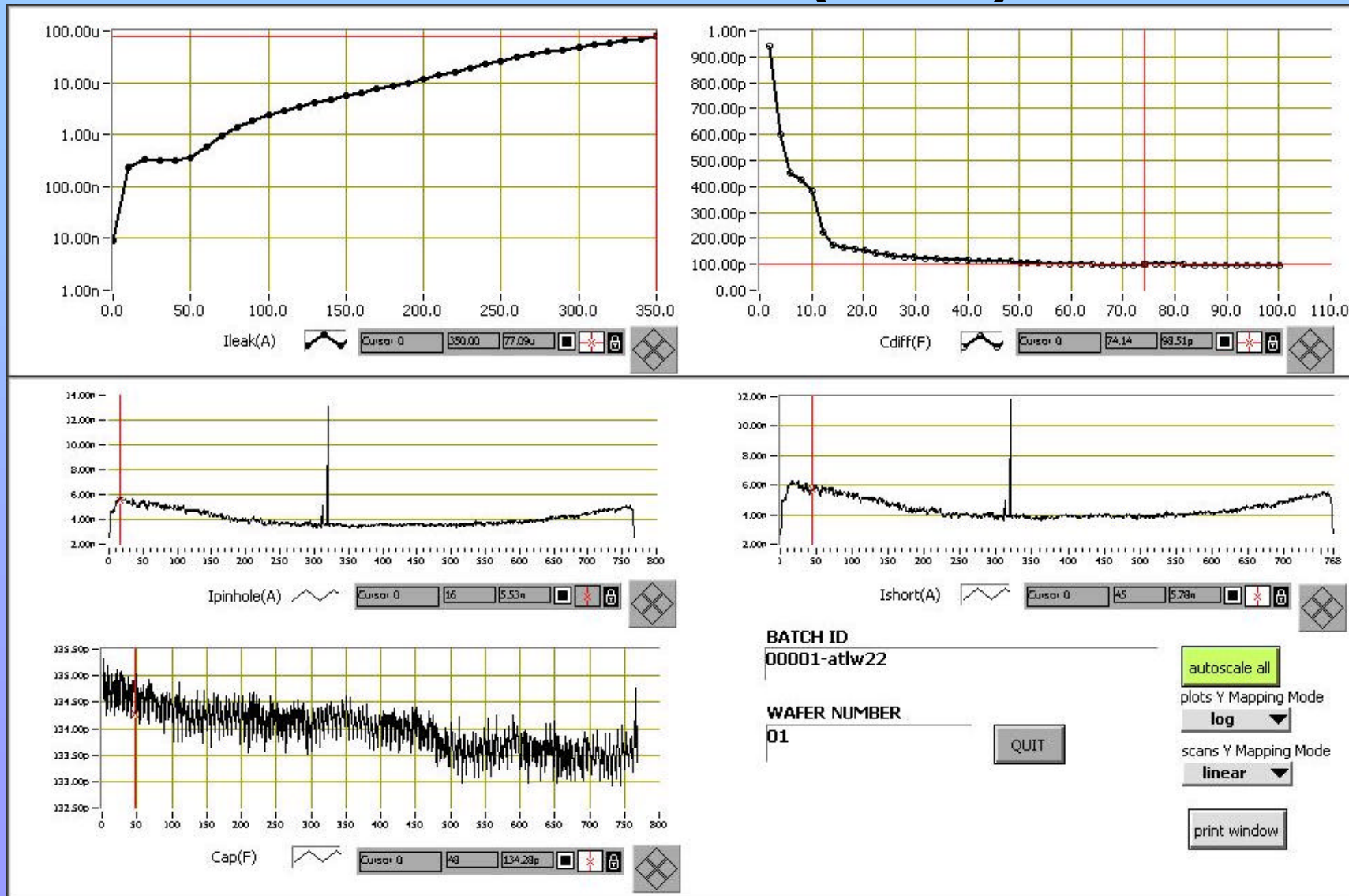
- "High" speed
- Low Manpower
 - => Automatic testing
 - => Simple specifications
 - => Focussed testing
 - => Constraints on pad design
- Data management

Standard Equipment

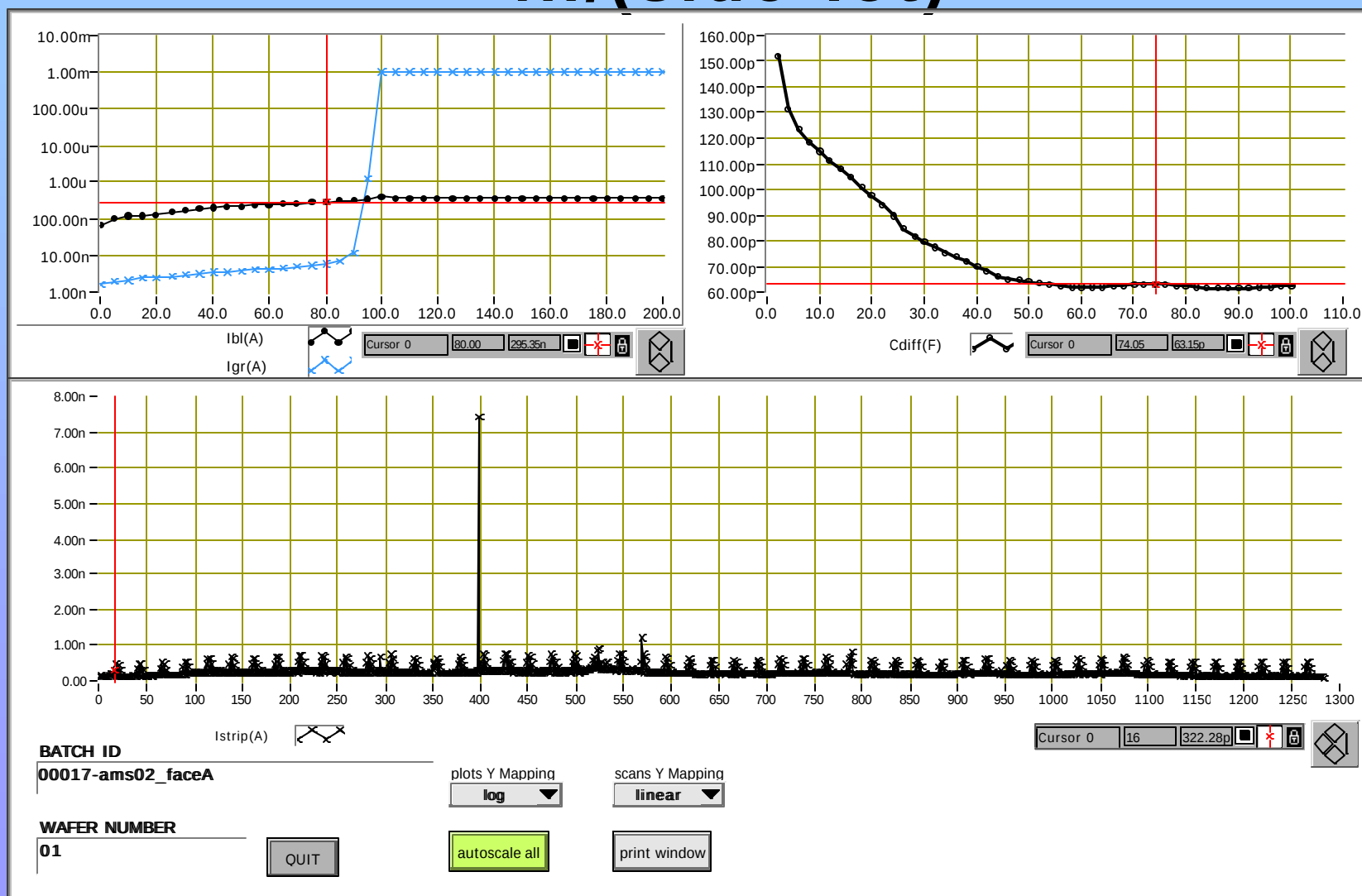
- Prober aspects (Electroglass EG2001ECX):
 - Backside damage control
 - Handling parts conditioning and qualification
 - Passivated wafers
 - Adapted chuck
 - Electrical contact
 - Safety
- Tester aspects (Keithley S450UX):
 - High voltage source (Keithley 237)
 - 1 pin $\rightarrow$ 1000 V $\Rightarrow$ 1 current measurement!
 - CVmeter (HP4284)

No significant hardware modifications !!!

SS AC - like MSD test (CMS): 12h/lot*



DS DC - like MSD test (AMS): 4h/(side*lot)

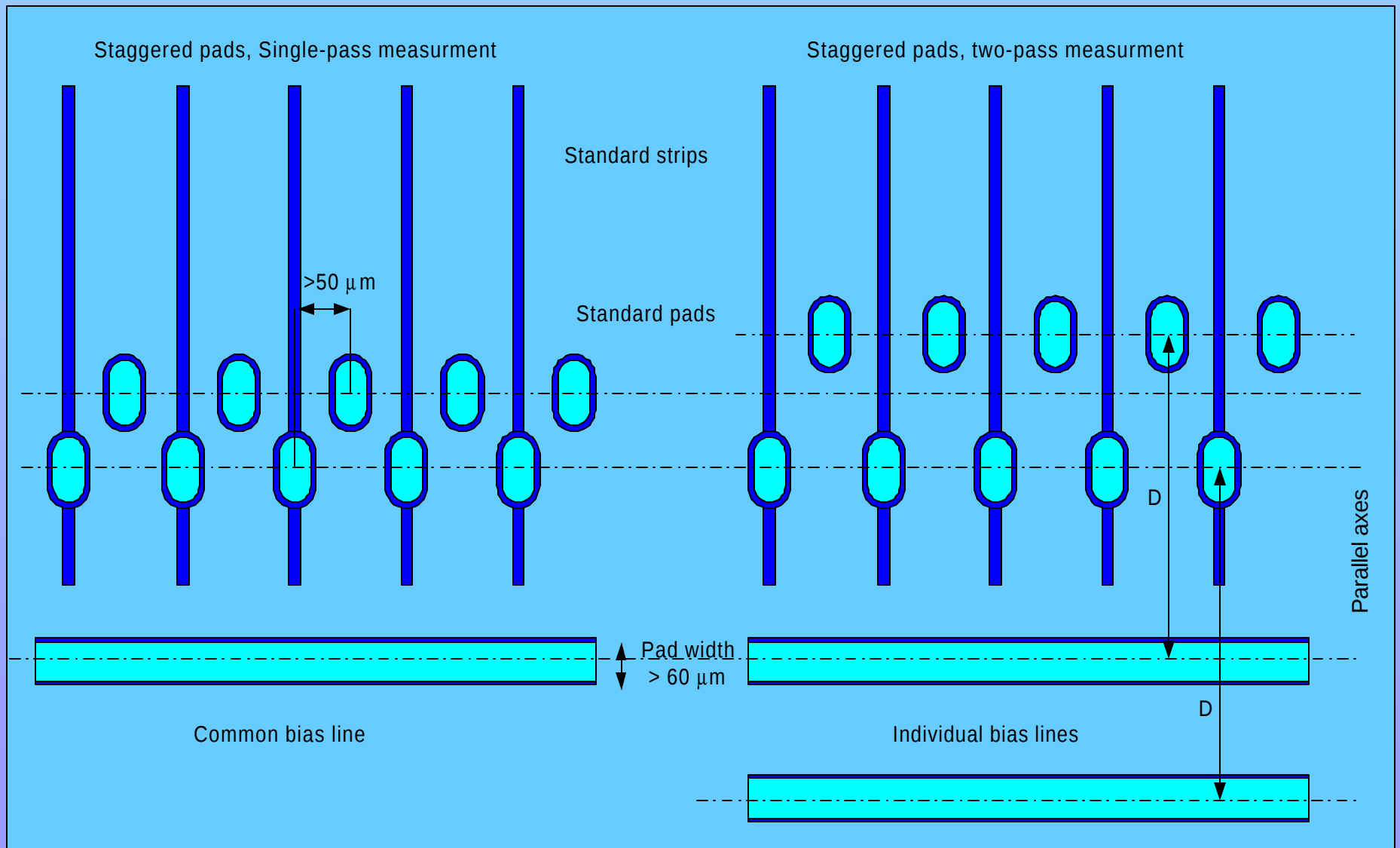


Design Considerations

- Pad size
 - 60 μm x 250 μm recommended
- Pad placing
 - Aligned
 - Equally spaced, as a rule
 - Fan devices can be handled with some precautions
- Biasing
 - Long bias ring contact

To Be Checked and Accepted!!!

Testable Pads

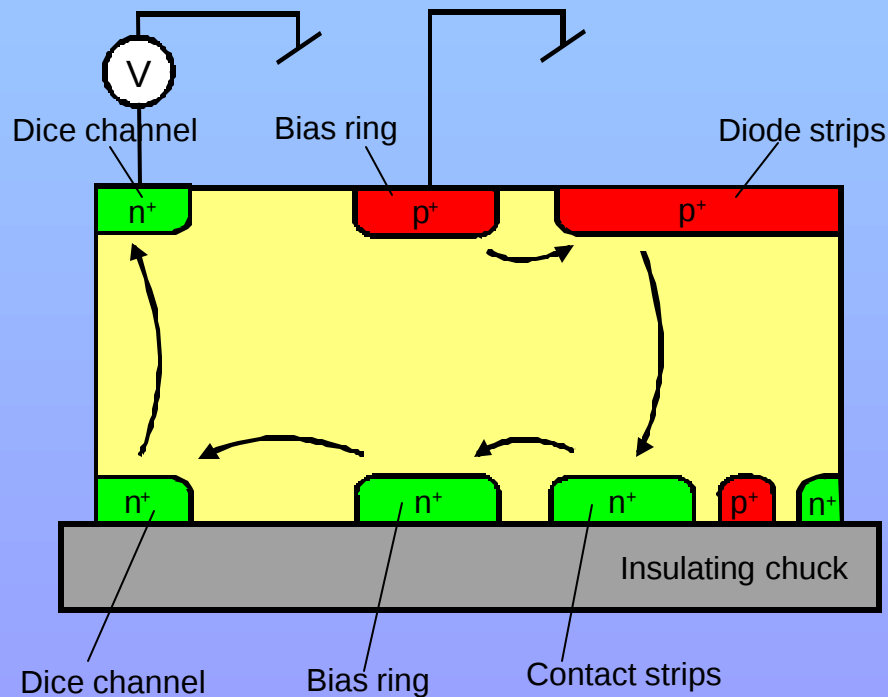


Double-Sided Biasing

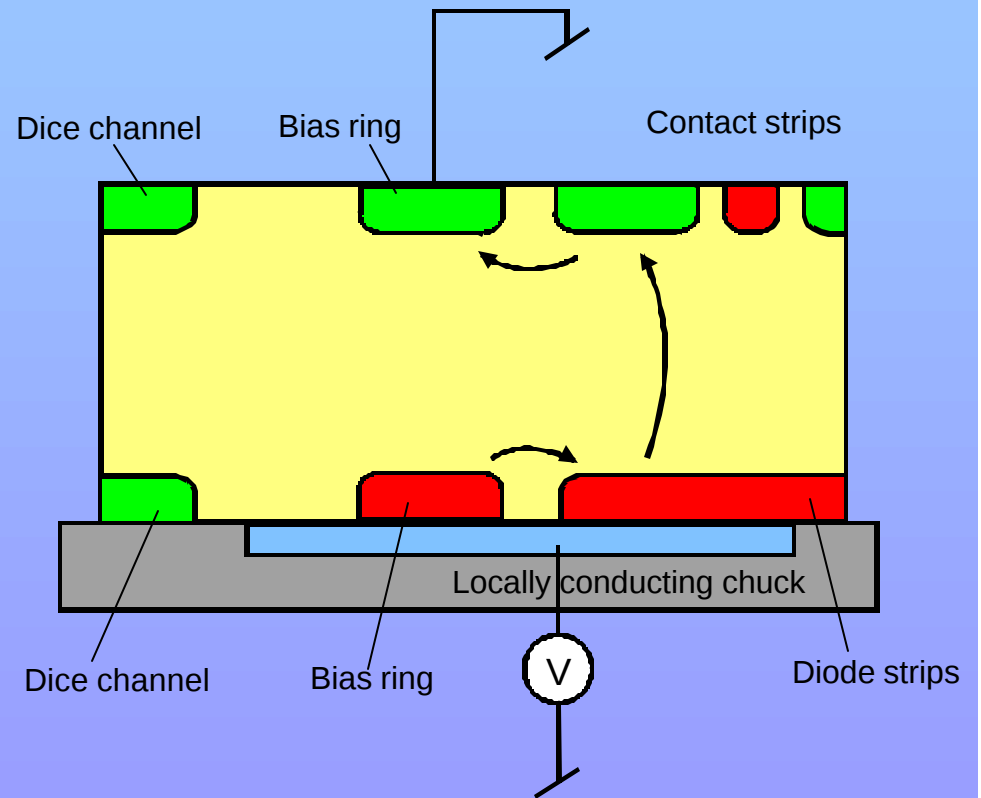
- For the p-side, from the top
 - Takes advantage of n-type "channel" implant
- For the n-side, from an locally conducting chuck
 - Implies some constraints on the p-side design
 - No adjustable part on chuck
- No "live" chuck

Test biasing

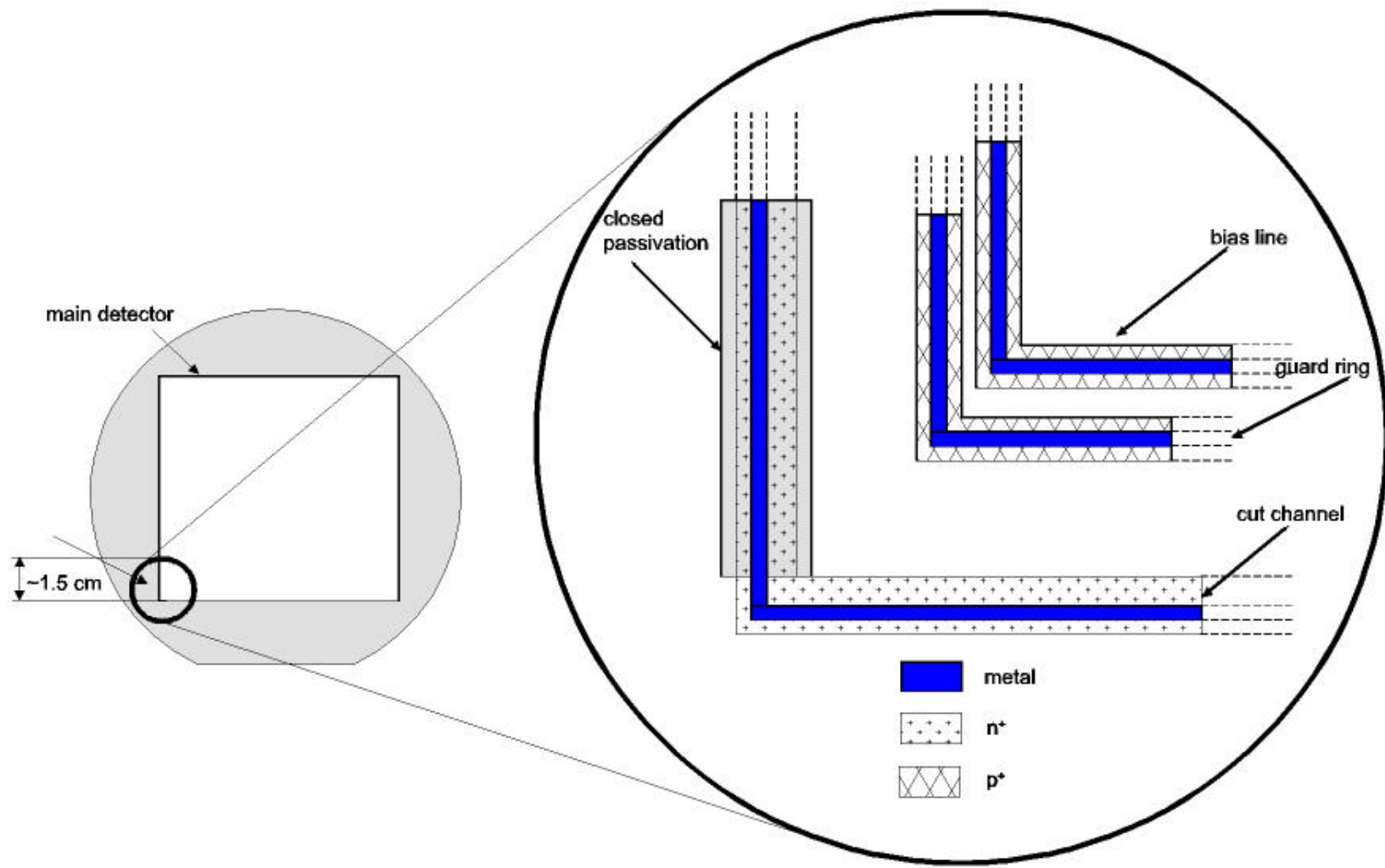
p-side testing



n-side testing



p-Side Design for n-side biasing



Pad Scratching

- Possible on the prober
- Complex programming ("cheat" the system)
- Supplementary handling
- Large enough pads!
- KISS

Conclusions

- Automatic DS testing on an industrial machine is possible
- Typical testing times are 8 – 12 h/lot
- Industry will not adapt the tester to the layout, so adapt the layout to the tester!

CSEM Automatic MSD Test System

