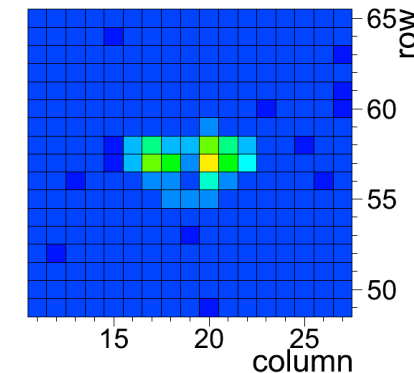
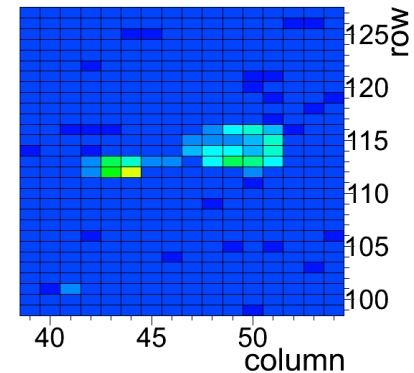
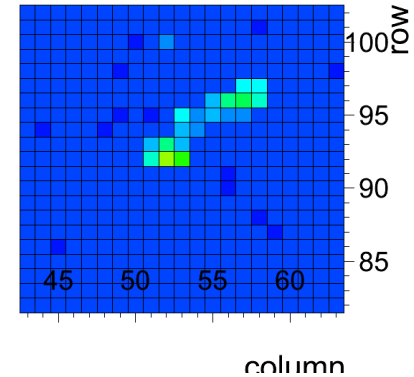
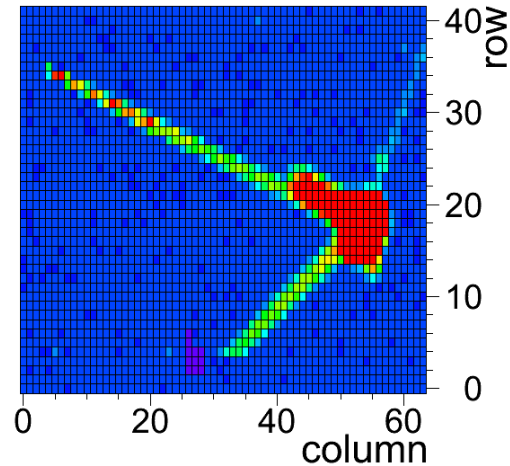


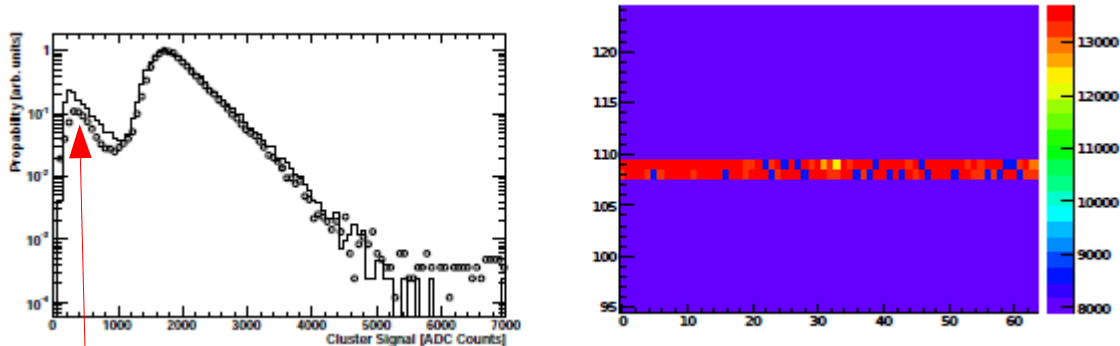
DEPFET TB summary



DEPFET TB summary

4th DEPFET workshop
– Ringberg Castle, May 4th 2010 -

Marcel Vos, IFIC Valencia



Clusters with fraction of a MIP signal. Two possible explanations: garbage from start-gate, secondaries from upstream material

	Data X	MC X	Data Y	MC Y
Straight Line Fit				
Residual (Gauss Fit $\pm 3\mu\text{m}$)	$1.55\mu\text{m}$	$1.77\mu\text{m}$	$1.54\mu\text{m}$	$1.27\mu\text{m}$

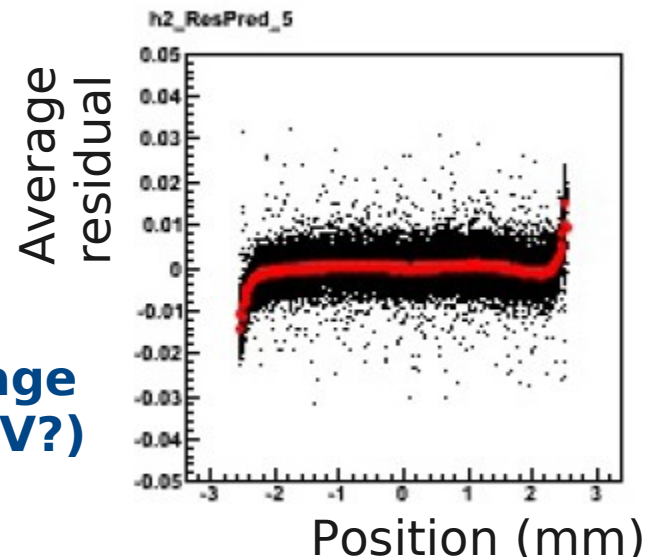
Residuals measured using “standard” EUDET software

TB2009 - Prague

Simulations in [μm]	Module 0 H.3.0.06 COCG L B 32x24 μm		Module 1 H.3.0.16 COCG L B 32x24 μm		Module 2 H.3.0.07 COCG V S 20x20 μm		Module 3 H.3.0.12 COCG L B 32x24 μm		Module 4 H.3.0.11 COCG L B 32x24 μm		Module 5 H.3.0.10 COCG L B 32x24 μm	
	x	y	x	y	x	y	x	y	x	y	x	y
Residuals	2.49	2.28	1.60	1.38	1.54	1.42	1.98	1.61	2.06	1.61	3.24	2.86
MC Residuals	2.49	2.26	1.63	1.36	1.56	1.43	1.99	1.62	2.10	1.66	3.21	2.84
Diff Residuals	0.00	0.03	-0.03	0.02	-0.02	-0.01	-0.02	-0.01	-0.04	-0.05	0.03	0.02
Resolution	1.74	1.58	1.08	0.86	1.12	1.02	1.59	1.20	1.56	1.07	2.20	1.96
MC Resolutions	1.73	1.55	1.11	0.85	1.15	1.04	1.62	1.22	1.63	1.17	2.12	1.90
Diff Resolution	0.00	0.03	-0.04	0.01	-0.03	-0.01	-0.02	-0.02	-0.07	-0.10	0.08	0.06
Truth resolutions	1.65	1.45	1.15	0.90	1.10	1.00	1.60	1.20	1.65	1.20	2.00	1.80

Excellent resolution, approaching 1 μm !

Still this nasty “edge effect”. Edge voltage does not seem to help (or does it at -10 V?)



See: “DEPFET beam test 2009 – Prague analysis report, DEPFET Wiki

TB2009 analysis finalizing (see talk by Peter K. on Prague results and Christian Geisler/Benjamin Schwenker for Goettingen analysis)

Basic performance results agree between two completely independent analyses. After some work to understand:

- pedestal/common-mode
- sagging telescope module
- clusters with a fraction of the MIP signal
- double-pixel eta-correction
- further corrections, gain variations

Basic results agree with digitizer model (see Belle-II TDR)

Summarize results:

- one paper summarizing all PXD5/Curo results
- long support notes
- digitizer validation note
- dedicated notes to edge effect, energy scan...

SPS Operation

Period 6 2010 Oct 21 to Nov 22

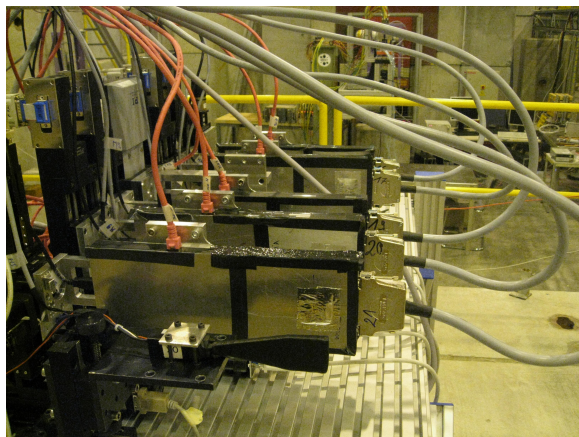
Schedule Issue date: 15-April-2010

Version 2.0

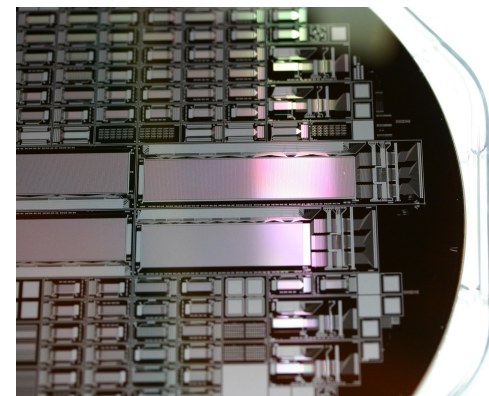
(colour code: purple (dark) = scheduling meeting, light green (light) = weekend or holiday)

Thu 21 Oct Fri 22 Oct Sat 23 Oct Sun 24 Oct Mon 25 W443 Tue 26 Oct Wed 27 Oct Thu 28 Oct Fri 29 Oct Sat 30 Oct Sun 31 Oct Mon 1 W444 Tue 2 Nov Wed 3 Nov Thu 4 Nov Fri 5 Nov Sat 6 Nov Sun 7 Nov Mon 8 W445 Tue 9 Nov Wed 10 Nov Thu 11 Nov Fri 12 Nov Sat 13 Nov Sun 14 Nov Mon 15 W446 Tue 16 Nov Wed 17 Nov Thu 18 Nov Fri 19 Nov Sat 20 Nov Sun 21 W447 Mon 22 Nov																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Last slot of the SPS season (restarts May 2011)
 After SiLC (parasitic running should be possible)
 With EUDET if needed



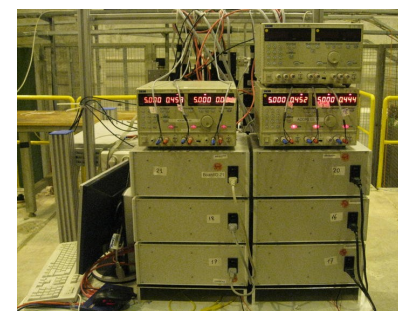
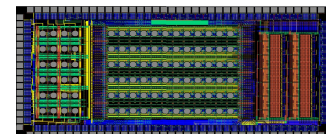
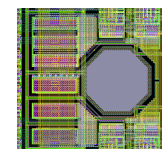
Telescope: use either EUDET (3-5 μm pointing precision, already at CERN) or S3B 2009 telescope (1 μm pointing precision)



If PXD6 appears in time, prepare for a very “hot” TB (new, thin sensors, new read-out, bench PS)

Otherwise, consider 2010 a first step, with a DCD-B based read-out system on the good old (thick) PXD5 sensors

→ Demonstrate “full-speed” read-out and exercise for 2011



Options we will have in case of ...

DCDB \ PXD6	On time	Late
YES	PXD6 ILC type matrix 24x24 μm^2 or 20x20 μm^2 & DCDB/DCDRO test system for ILC type matrix	PXD5 ILC type matrix 24x24 μm^2 or 20x20 μm^2 & DCDB/DCDRO test system for ILC type matrix
NO	PXD6 ILC type matrix 24x24 μm^2 or 20x20 μm^2 & S3B test system for ILC type matrix - modified -	PXD5 ILC type matrix 24x24 μm^2 or 20x20 μm^2 & S3B test system for ILC type matrix TB2009

year

2008/2009

Tentative title of TB paper

TB of the PXD5 production of DEPFET active pixel sensors
Micron resolution device, Digitizer validation

2010

TB of (thin) DEPFET a.p.s. (with full speed read-out)
Study realistic pedestals/common-mode

2011

TB of Belle-II PXD prototypes
Show this meets the requirements

Manpower

In 2009 we tried to do test beam in such a way it does not disrupt ongoing work in design work. Reduce beam-time to a single week, routine running with minimal load on designers/experts.

Rely on continued support from Bonn (DAQ, monitor, mechanics?, power supplies??), Goettingen and Prague (analysis)

In 2010 we still do the former (even more so if we use the EUDET telescope), but if DCD-readout option is chosen, we need involvement of a DCDB-expert (in November!).



Conclusions

Wrapping up the results from the PXD5/Curo era