

Evaluation of CdTe with XPAD3 chips

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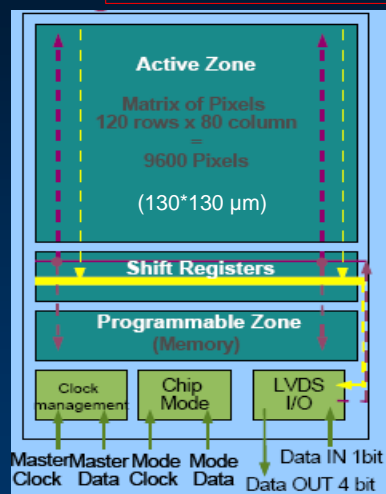
SOLEIL synchrotron, St Aubin, France

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Barcelona Pixel detector meeting

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The XPAD3 chips



- IBM 0.25 μm technology
- 1.74 x 1 cm²
- 3 sides buttable chip
- 2 versions for handling e- or hole collection detectors
- 500 ns occupation time
- Analog output on 1 pixel

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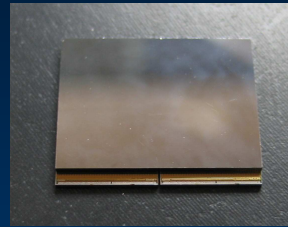
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CdTe detectors and process

➤ 19200 CdTe pixel detectors (30*20 mm)
detectors made by Acrorad (700 μm thick)

➤ 2 types :

- Pt near ohmic contacts for e- collection
- Blocking indium contact for hole collection



➤ Hybridization on 2*XPAD3 chips with low temp process made by AJAT (Finland)

➤ 10 h collection type and 2 e- collection type realized

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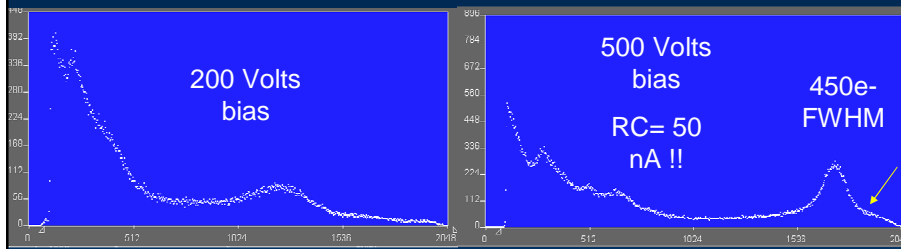
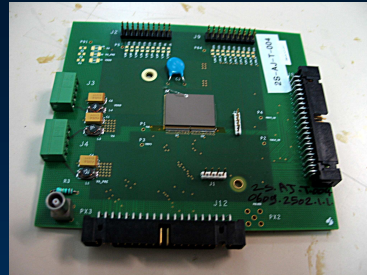
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CdTe in hole collection mode

➤ 1 hybrid placed in evaluation board

➤ Analog output of 1 pixel connected to spectrum analyser

➤ Am 241 source

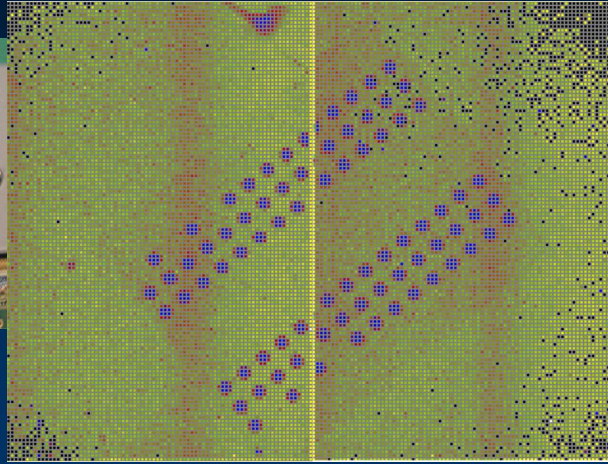
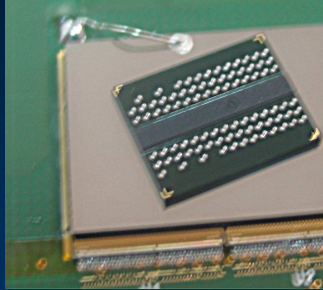


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CdTe in hole collection mode con't

- Imaging at 10 keV threshold, Am241



- Bads bumps on corners

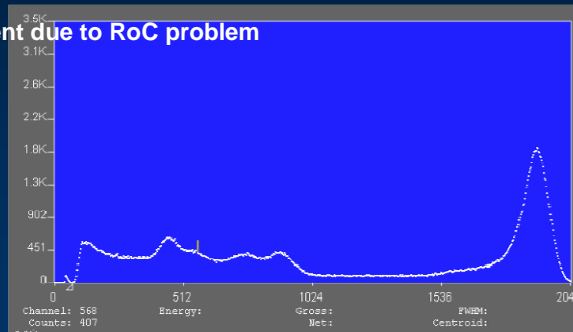
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CdTe in e- collection mode

- 250 Volts bias, 3.4 μ A RC (instable)
- About 600 e- FWHM, regular photopeak

- No image at the moment due to RoC problem



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Preliminary conclusions

- Both CdTe polarities are working in pixel detectors
- Hole collection seems more interesting for low RC –and longer shaping time
- Remaining problems :
 - Fragile (detector itself and bumps)
 - Long term stability ?
 - and detector overall dimensions ...
- *Epi AsGa hybrid with XPAD3 foreseen*