

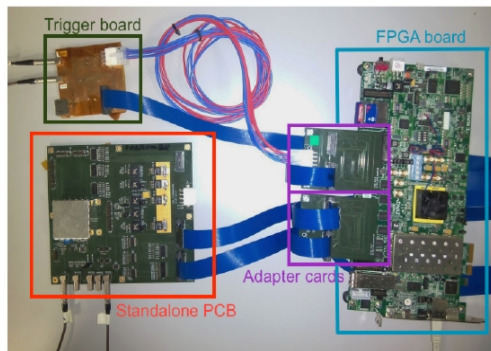
Status of WP6 Activities at IFAE

*R. Casanova, F. Forster, M. Chmeissani, E. Peregrina, J. Garcia,
S. Terzo, S. Grinstein
IFAE-Barcelona*

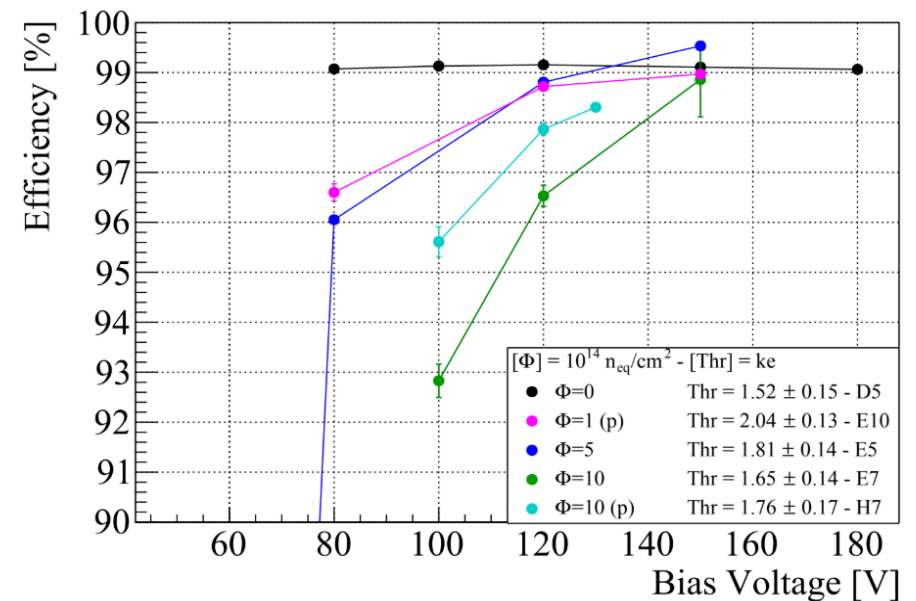
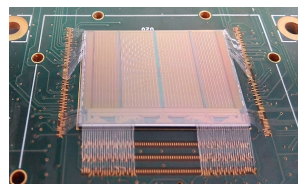
WP6 Meeting
28 Nov 2019

H35Demo: Full characterization

- IFAE participated in the design and led the characterization of the first full size monolithic depleted CMOS prototype, called the H35demo
- Excellent performance before [1] and after irradiation [2] up to $1E15\text{neq/cm}^2$
 - Compatible with outer pixel layer of HL-LHC ATLAS pixel detector



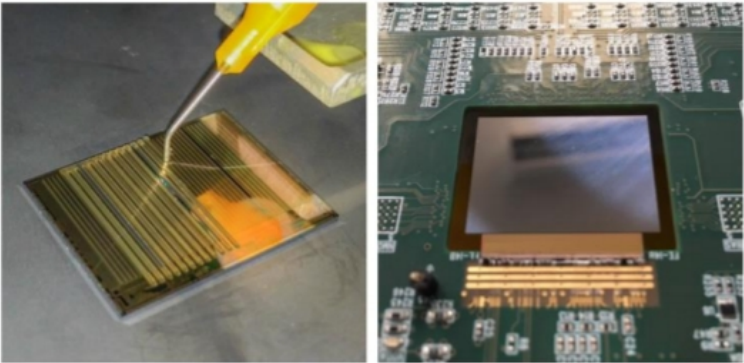
IFAE readout system



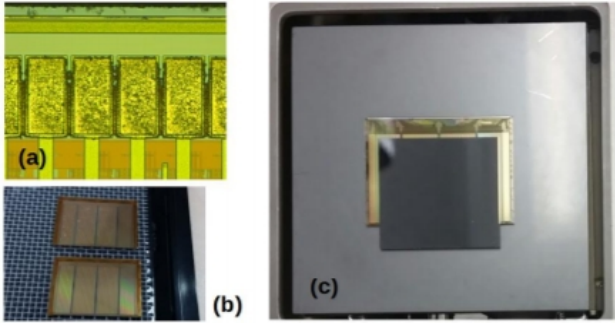
[1] S. Terzo et al., JINST 12 (2017) C07023

[2] Sterzo et al., JINST 14 (2019) P02016

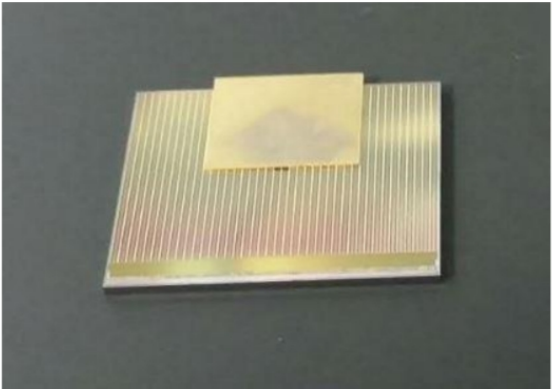
HVCMOS AC and DC Devices Produced



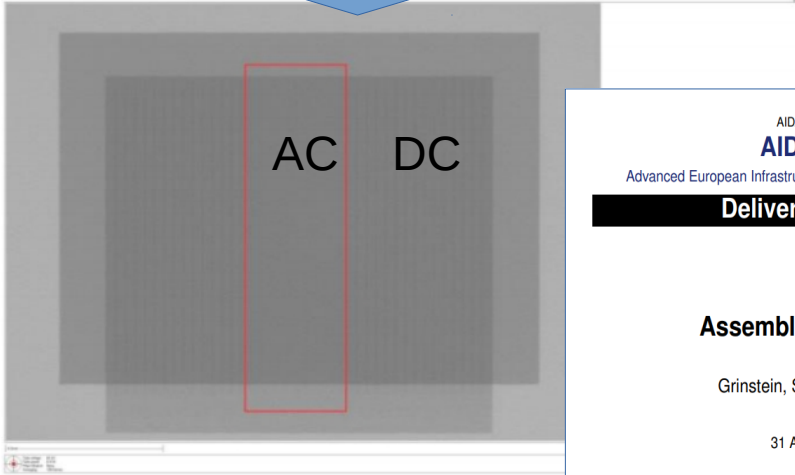
FEI4 and H35demo AC coupled



FEI4 and H35demo AC and DC coupled



LFCPIX and FEI4 DC coupled




Hybridization not really a target of this WP anymore. Report done.

AIDA-2020-D6.6
AIDA-2020
 Advanced European Infrastructures for Detectors at Accelerators
Deliverable Report

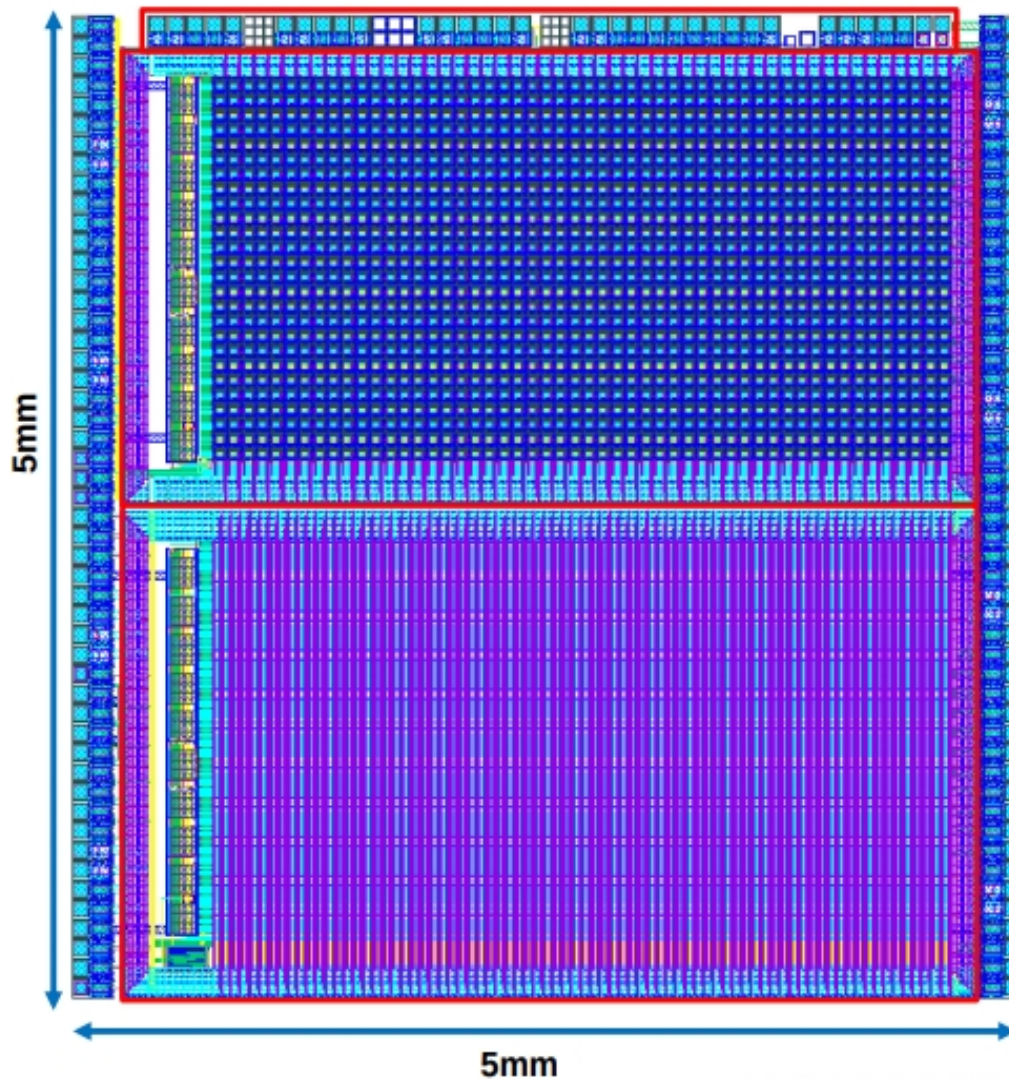
Assemblies delivered

Grinstein, Sebastian (IFAE)

31 August 2018

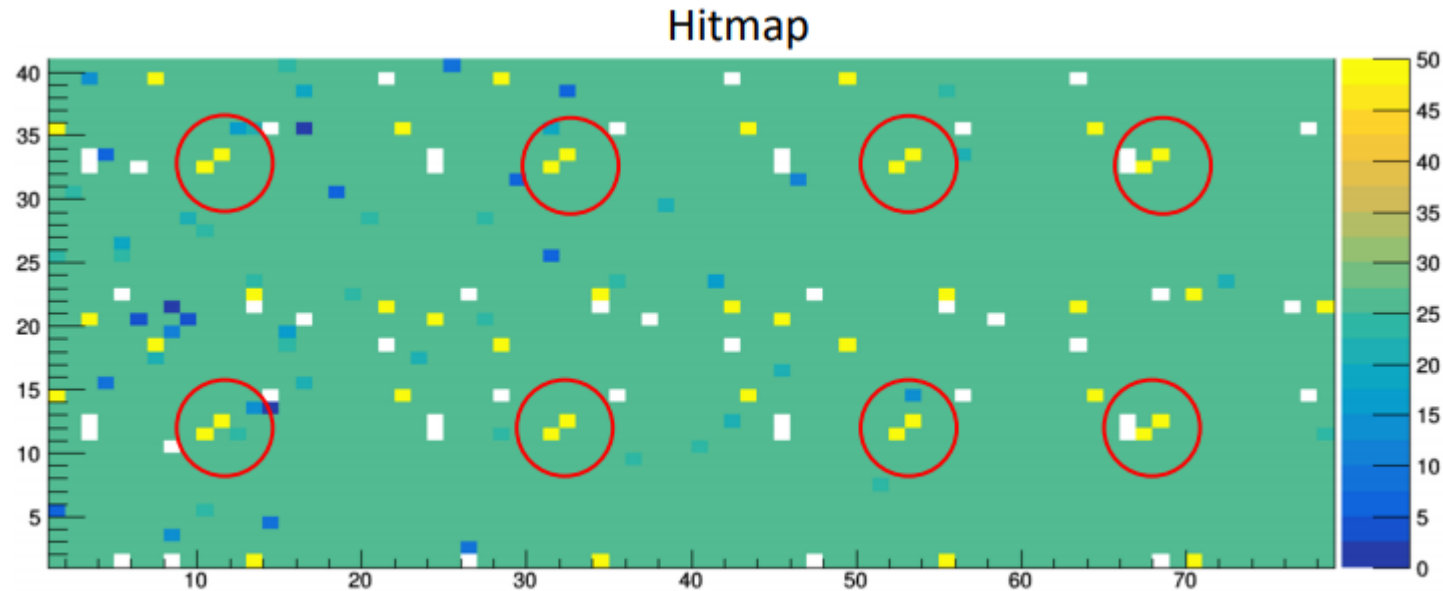


LF2 ASIC (RD50-MPW1)



- **Design:** IFAE, Univ. of Liverpool
- **Area:** 5x5mm²
- **Process:** 0.15μm HVCMOS from LFoundry
- **2 wafers:**
 - 600Ω·cm
 - 1900Ω·cm
- **3 main blocks:**
 - Test structures
 - Photon counting matrix (3.9 x 2mm² with pixel size of 75 x 75μm²)
 - FEI3 pixel matrix (3.9 x 2mm² with pixel size of 50 x 50μm²)

LF2 ASIC (RD50-MPW1)

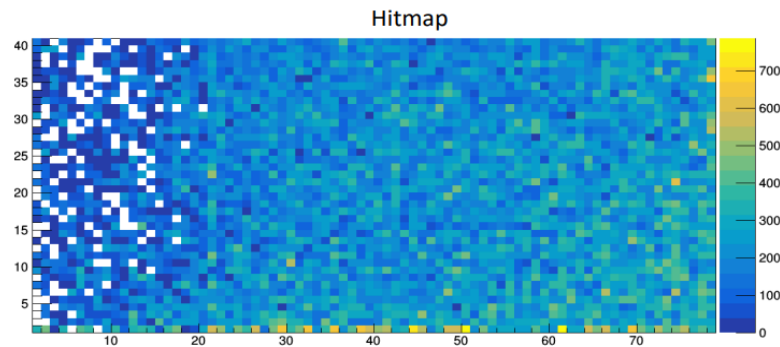


Note: Injection is done in 8 pixel at a time (every 20 rows/cols, a pixel is selected)

FEI3-like matrix working, though some digital cross talk apparent.

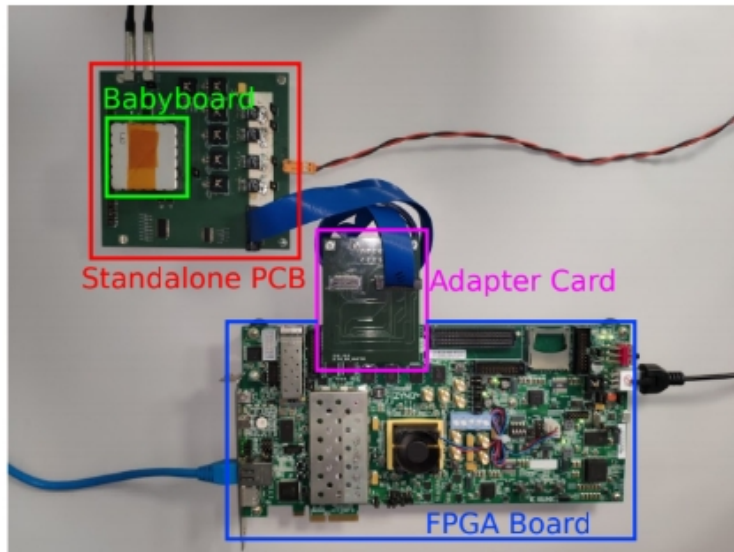
R. Casanova TWEPP 2019

Source scan, Sr90

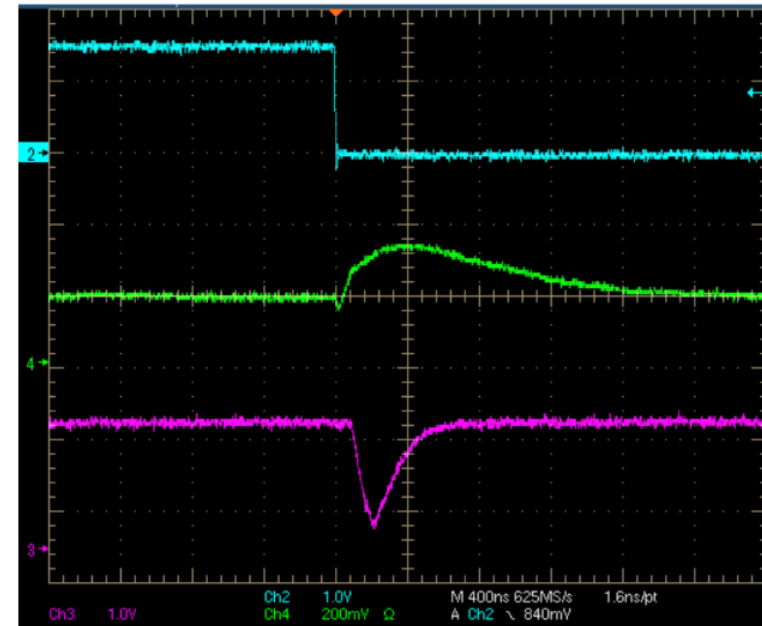


LF2: Photon Counter

- IFAE exploring the usage of monolithic devices for soft X-ray applications
- Photon counting matrix ($75 \times 75 \mu\text{m}^2$) with a 16-bit counter
- Developed readout system and verified basic operation



(b) LF2 readout system



R. Casanova, PoS (TWEPP-17) 039

Work also in the context of RD50 in collaboration of U Liverpool et al.