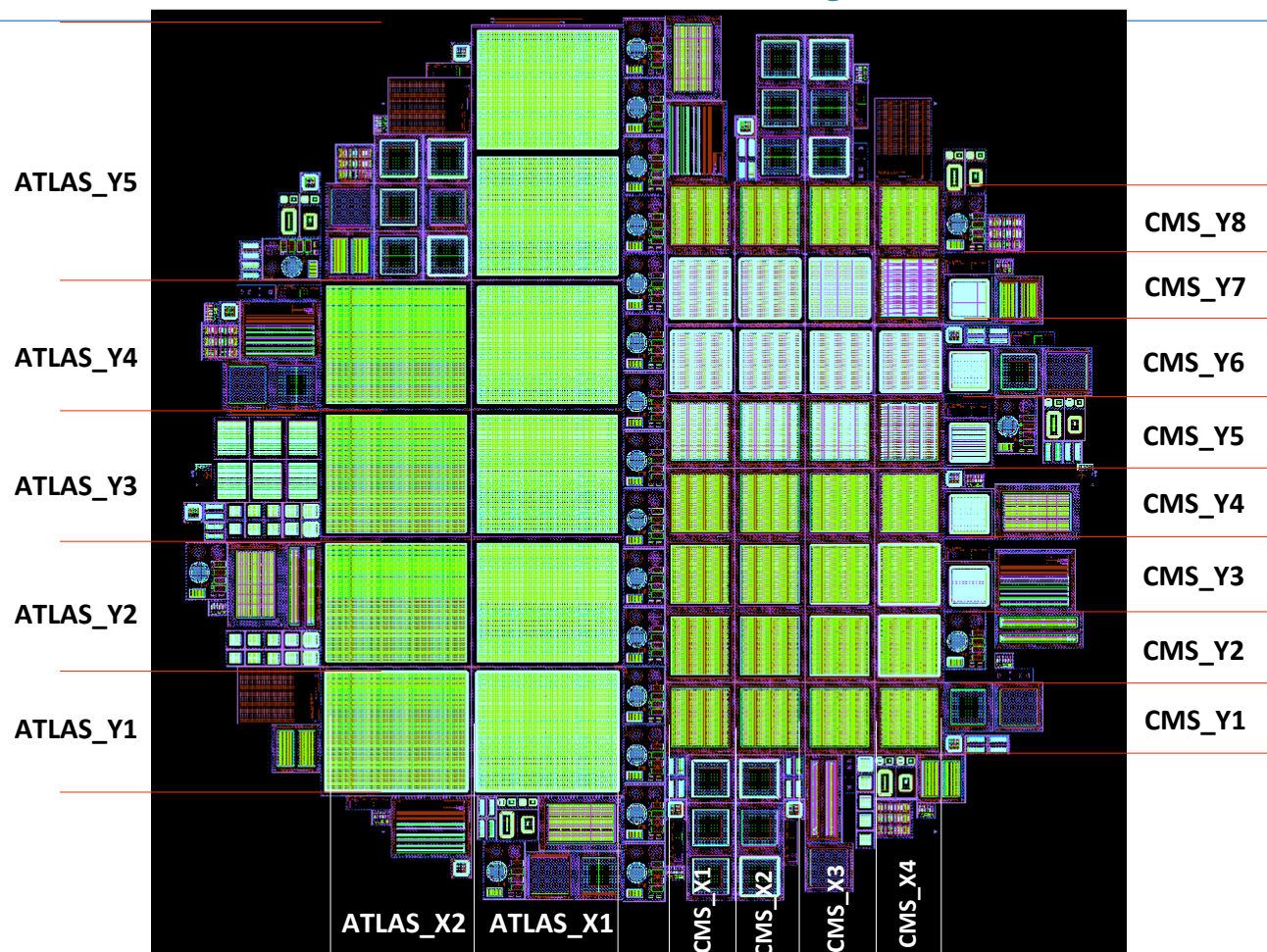


Update INFN-FBK Pixel R&D Bump Bonding and BCB

Meeting RD Pixel IT 19 Oct 2015

M. Meschini

Pixel Devices identification



27/11/14

A. Messineo and M. Meschini, CMS R&D meeting with IZM

2

Planari

SENSORI DA SELEZIONARE

- P20_2, pstop, 10GR ps, COORDINATE x=2 y=7
- PD34A, pstop, 1GR no ps, COORDINATE x=1 y=5
- PD1, no pstop, 1GR no ps, COORDINATE x=1 y=1
- PDC1, no pstop, 5GR ps, COORDINATE x=3 y=2

Sensori utili

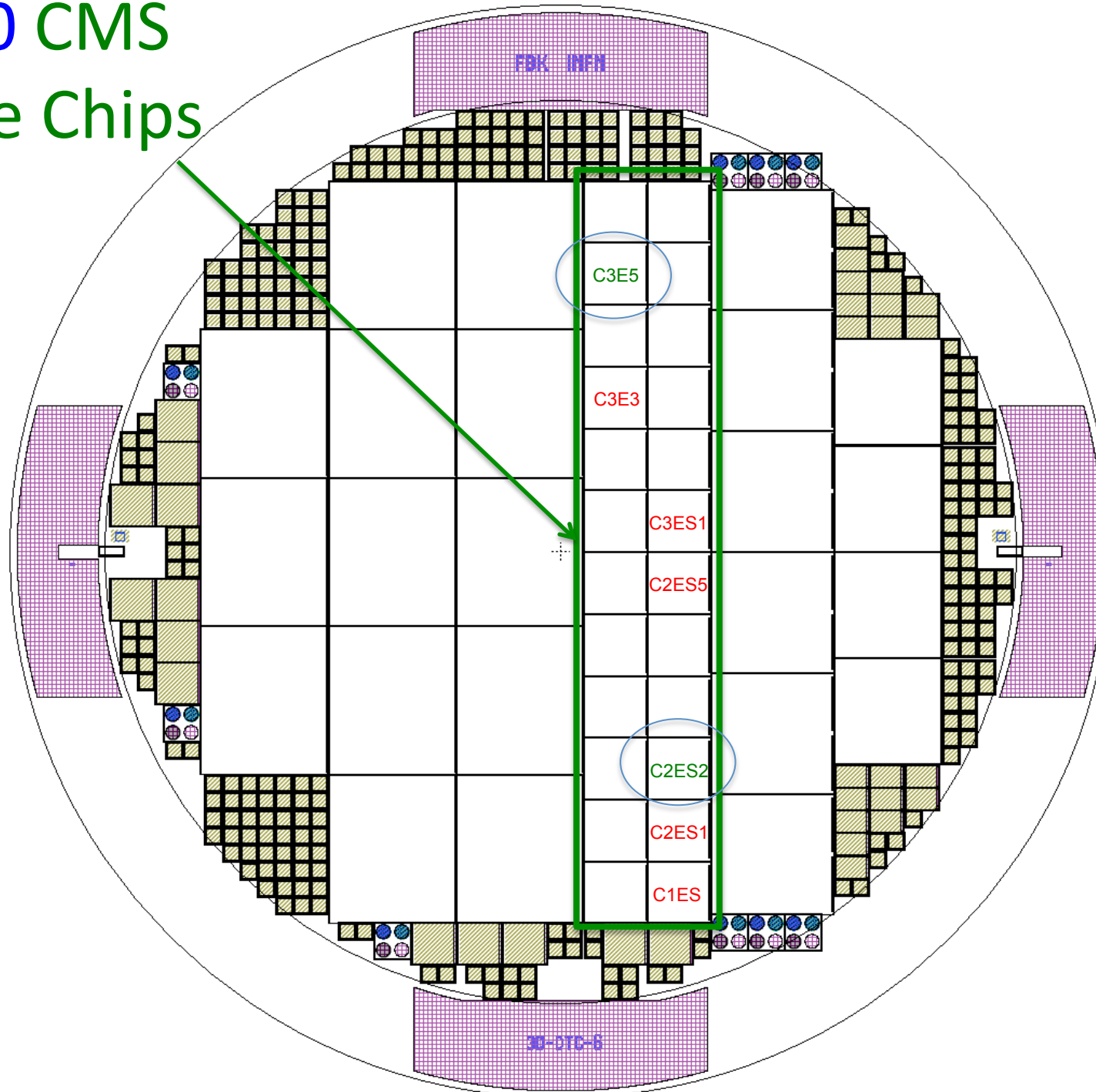
3D

- C1ES
- C2ES1, C2ES2, C2ES5
- C3E3 (+ C3E5)
- C3ES1

Sensori scelti per primi 3D assembly
con PSI46 analogico

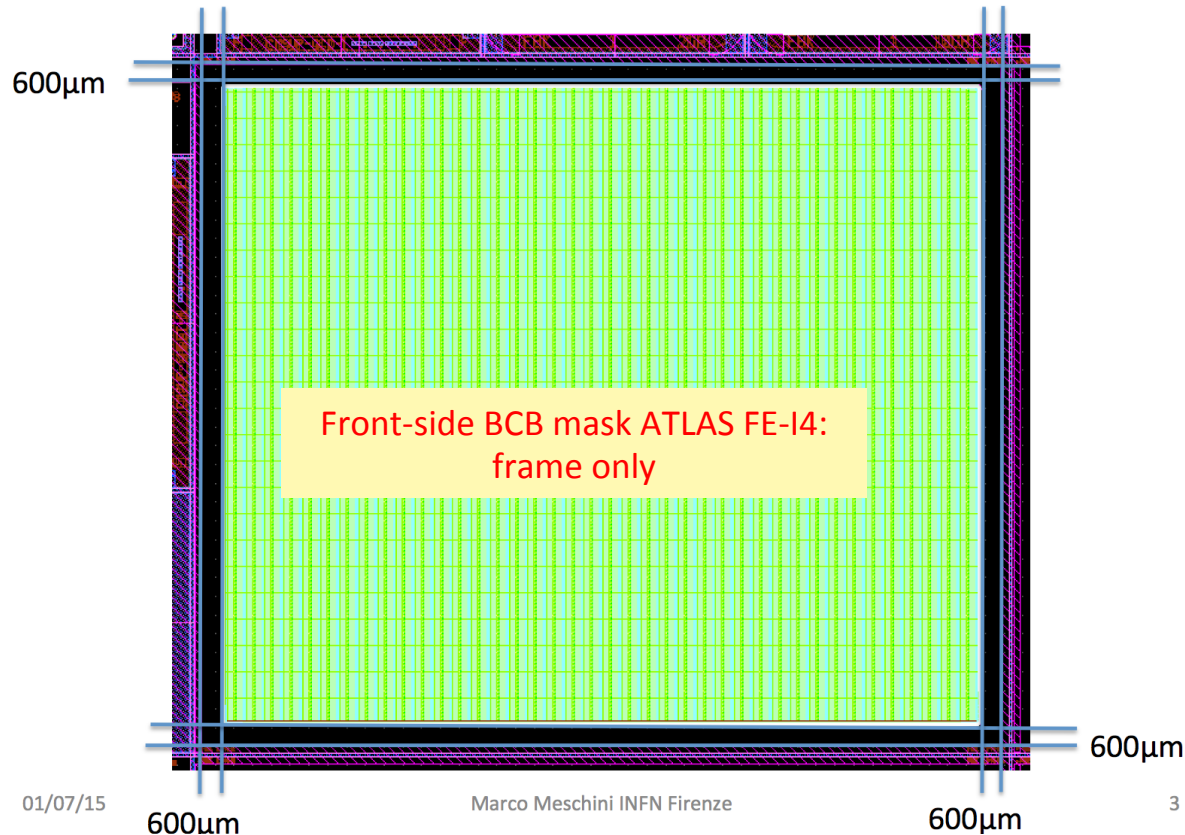
- C2ES2
- C3E5

W10 CMS Single Chips

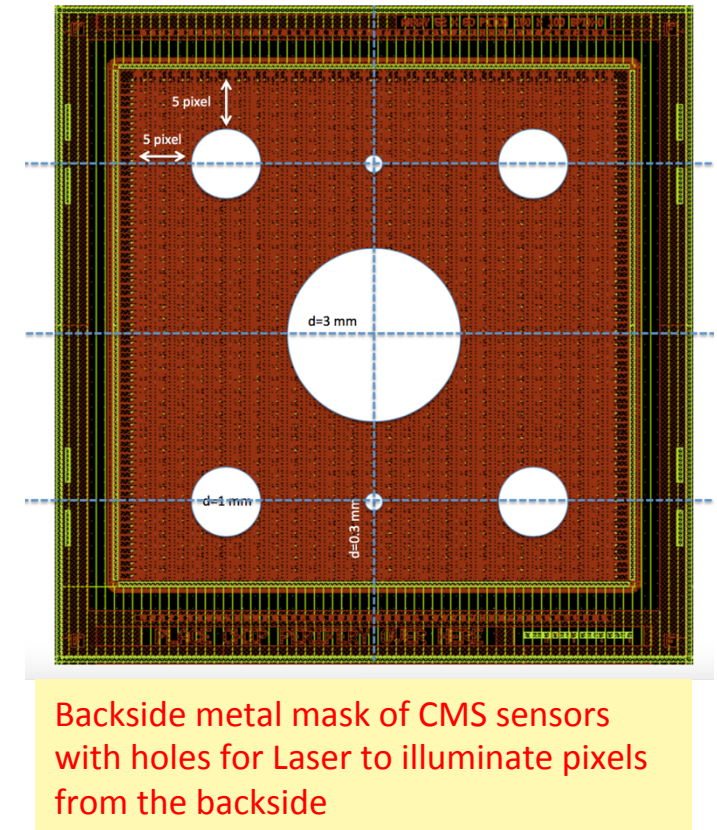


Back and Front-side Wafer Processing at IZM

Design of Sensor BCB and backside metal masks (INFN design)



First trial: BCB on sensor (CMS+ATLAS) periphery only
ATLAS 600μm width, CMS 800-1100μm width

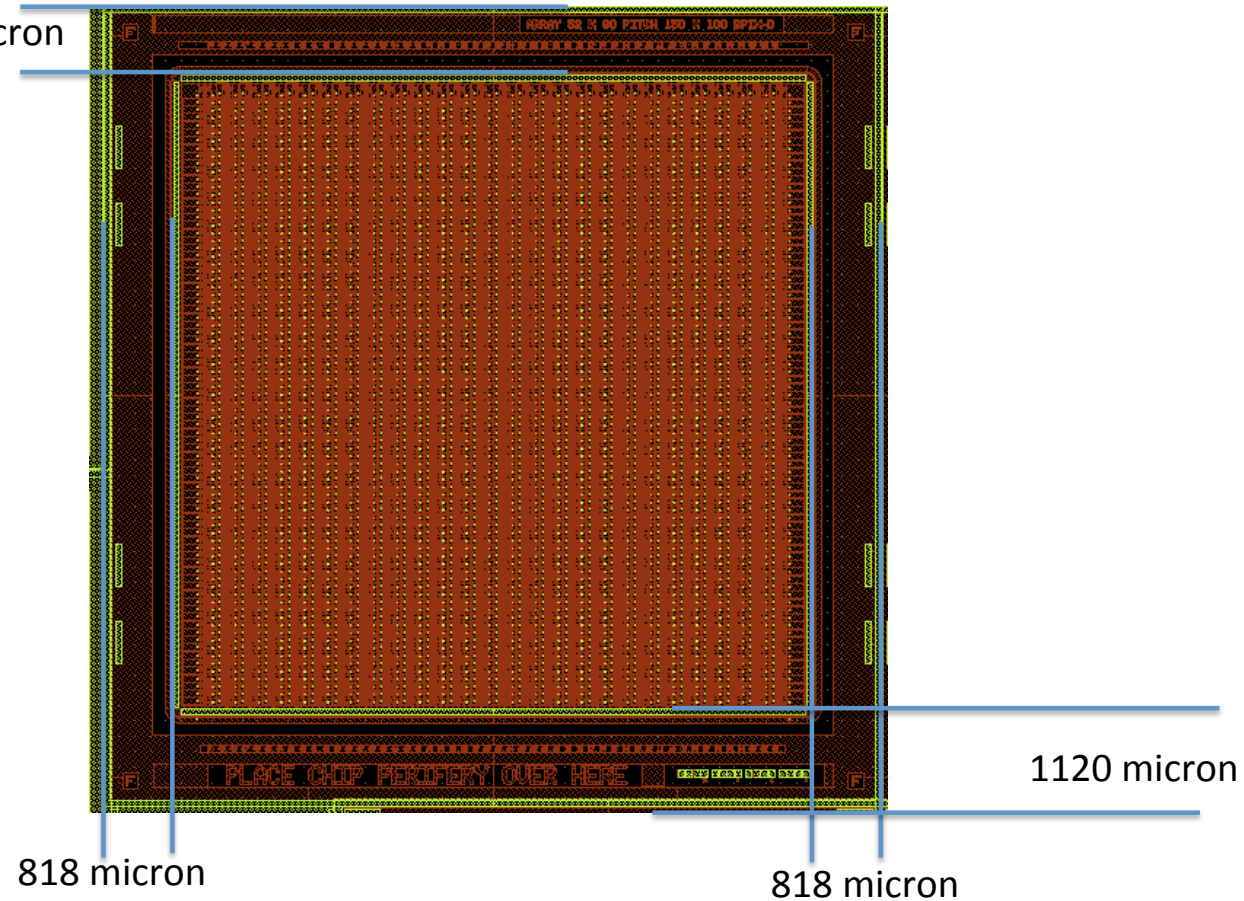


BCB PIXEL CMS

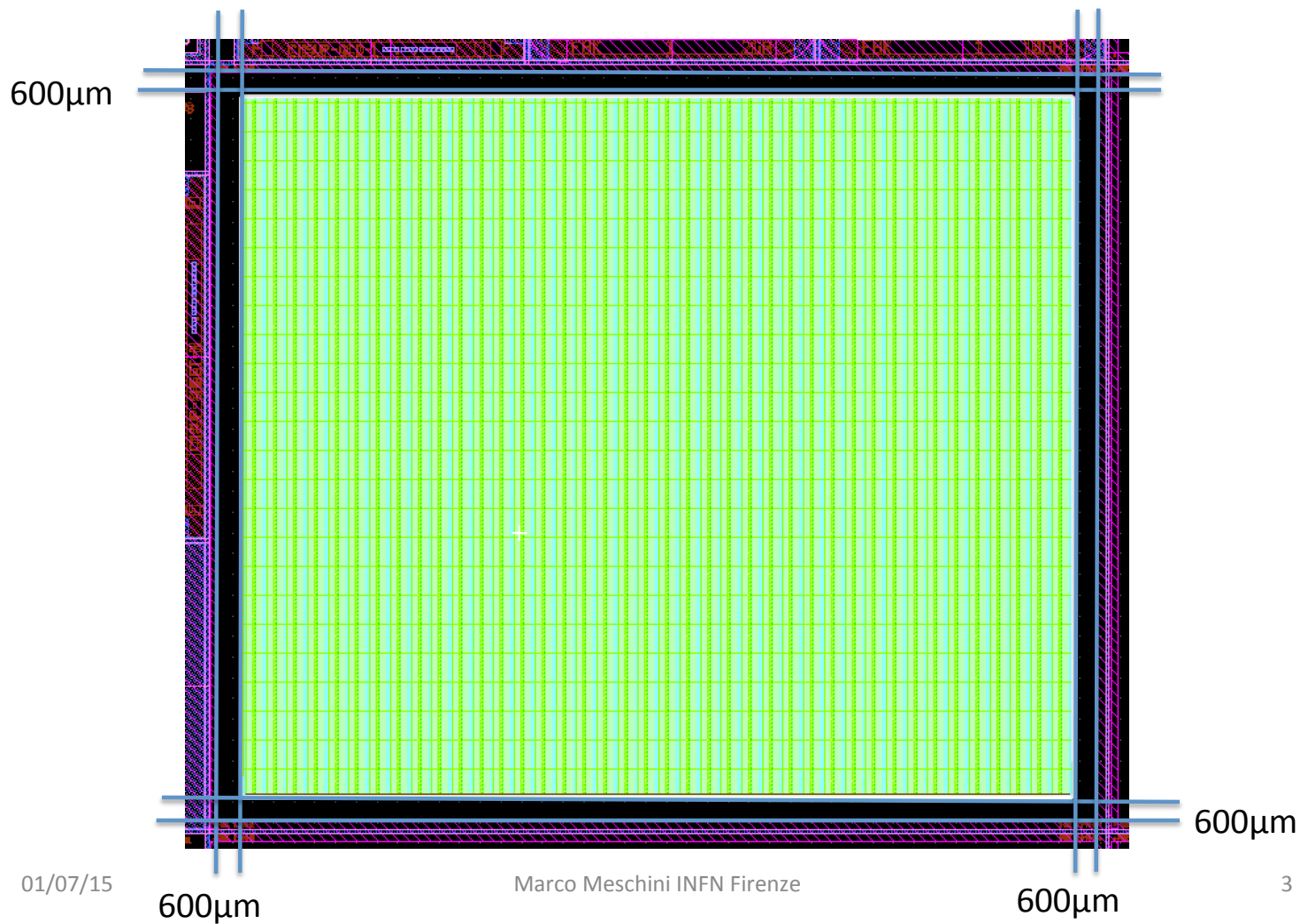
	Y1	Y2	Y3	Y4	Y5	Y7	Y8
CMS_X1	PD1	PDA	PDA2	PD5	P34A	PD1	PDp1
CMS_X2	PD2	PDB	PDB2	PD6	P34B	PD2	PDp2
CMS_X3	PD3	PDC	PDC2		P34C	PD3	PDp3
CMS_X4	PD4	PDD	PDD2				PDp4

	Y6	Y7
CMS_X4	FP30	FP50

818 micron



FE-I4 SINGLE ATLAS X1-X2; Y1-Y4

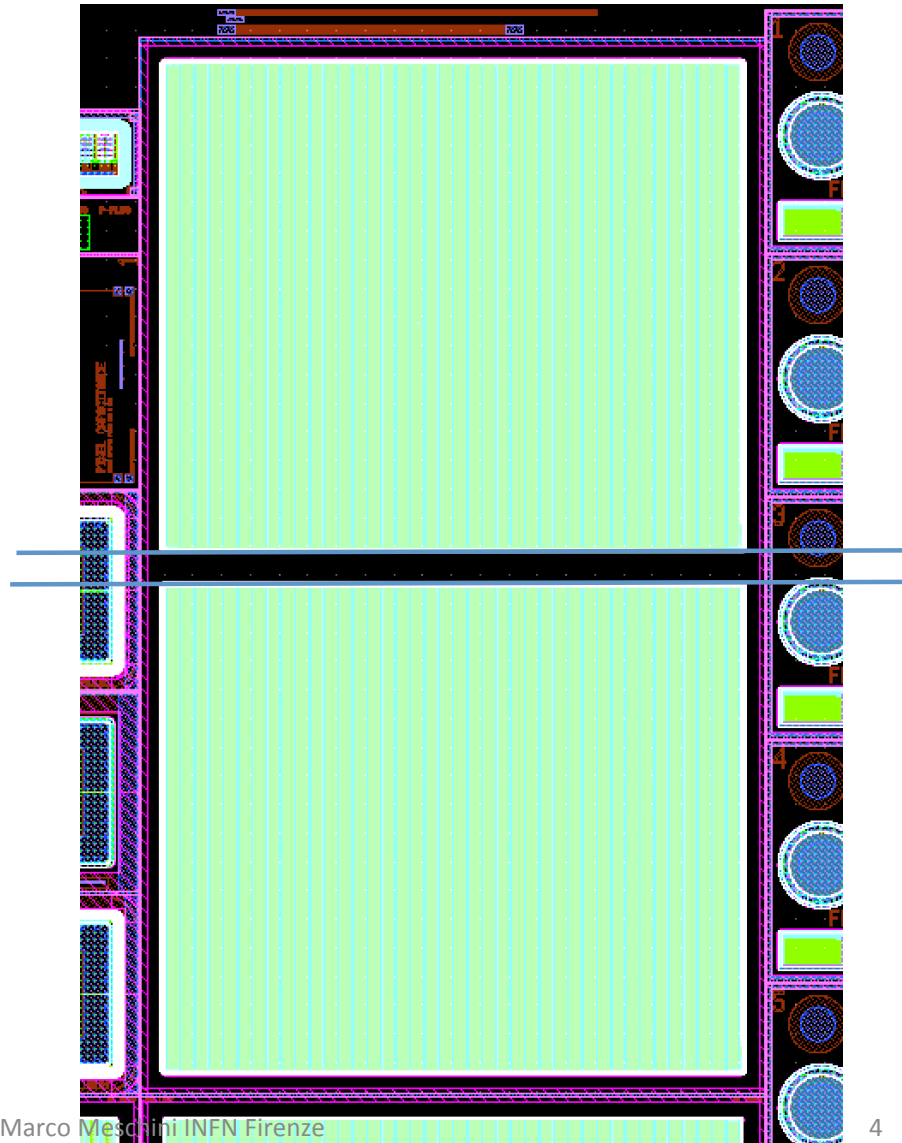


BCB PIXEL ATLAS DOUBLET

FE-I4 DOUBLET ATLAS
X1; Y5

BCB as in previous slide
plus the area between
sensors

1320 μ m



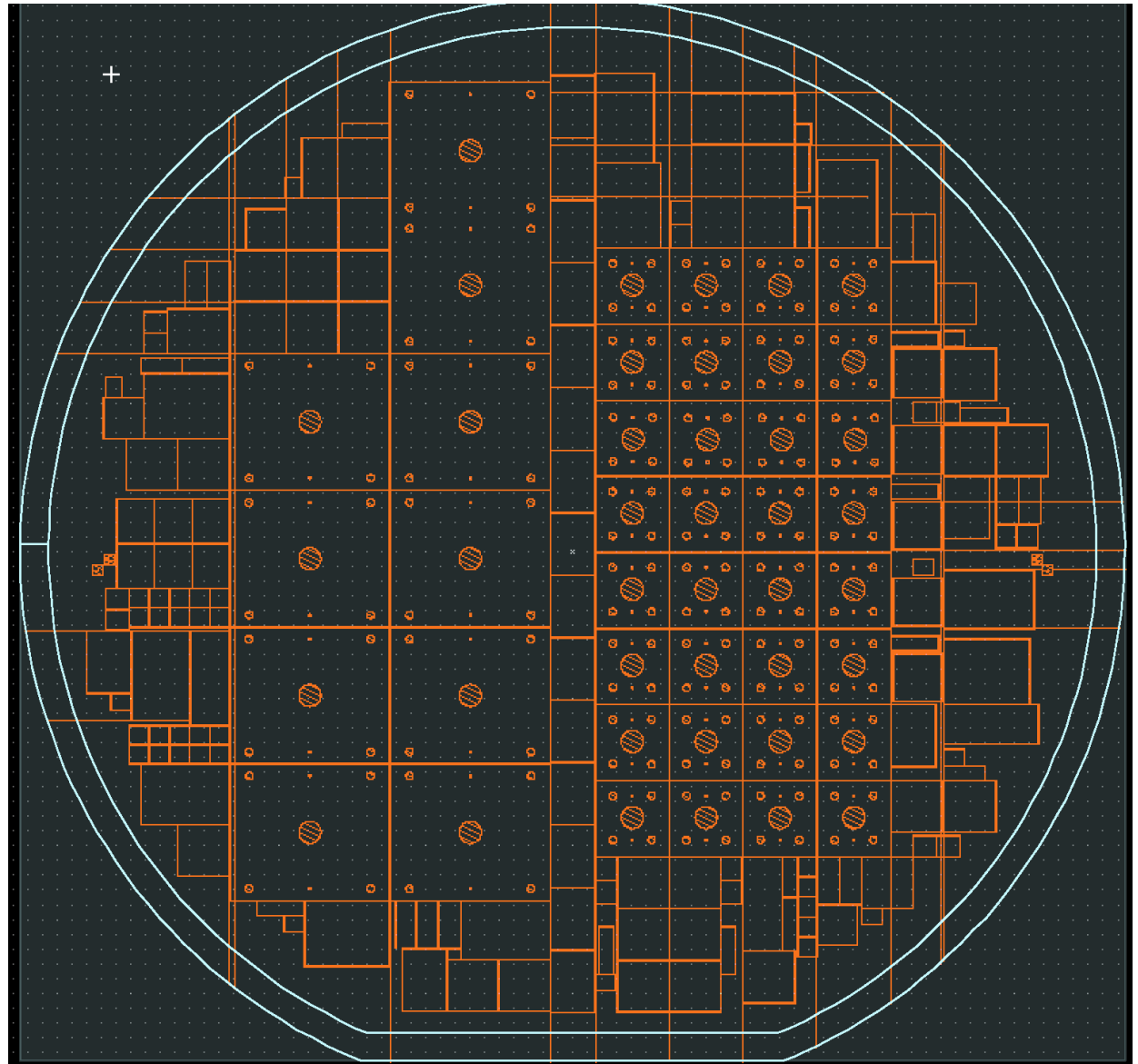
01/07/15

Marco Meschini INFN Firenze

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Metal Back at IZM

- Metal mask agreed with IZM
- Orange lines and shaded area are without metal



Bump Bonding at IZM

Final total wafer thickness 285μm

100μm thick

130μm thick

Wafer ID	30		TIPO
CMS Devices	X	Y	
95V	x1	y5	P34A
95V	x3	y7	P30
180V	x3	y8	PDp5
390V	x4	y1	PD4
Atlas Devices	X	Y	
160/135V	x1	y5	doublet
220V	x1	y2	F5S
160V	x1	y4	F2S
205V	x2	y2	F5N

MM
15/10/15

Wafer ID	80		TIPO
CMS Devices	X	Y	
	x1	y5	P34A
	x2	y4	PD6
	x3	y6	P200_1
	x4	y8	PDp6
Atlas Devices	X	Y	
	x1	y5	doublet
	x1	y2	F5S
	x2	y2	F5N
	x2	y4	F2N

V_bd

- Devices to be Bump bonded at IZM with PSIdig (no BCB on PSIdig)
 - 2 ATLAS doublets
 - 6 ATLAS FEI4
 - 8 CMS PSIdig