

# - ATLAS12A sensor measurements -

**Non-irradiated samples**

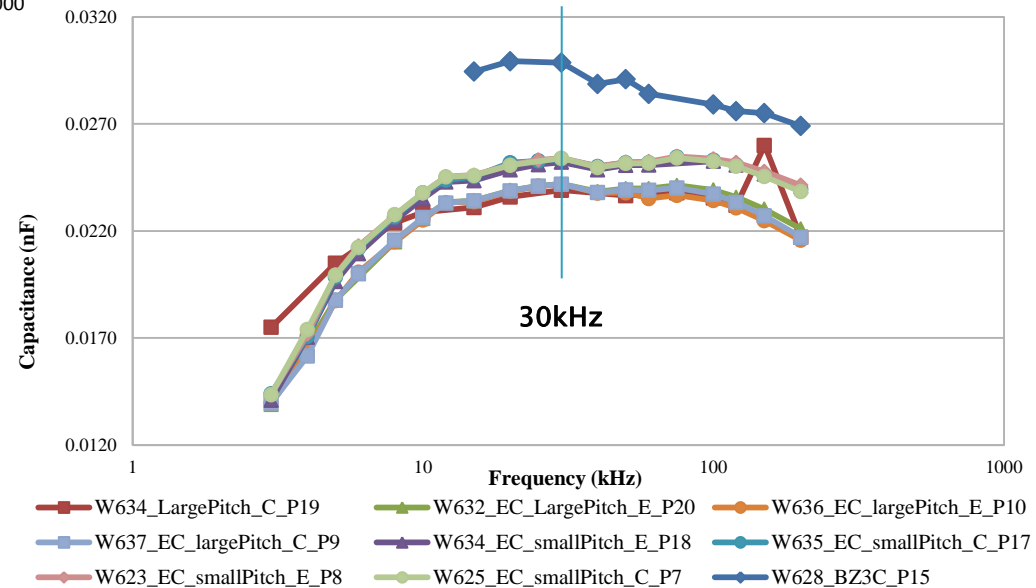
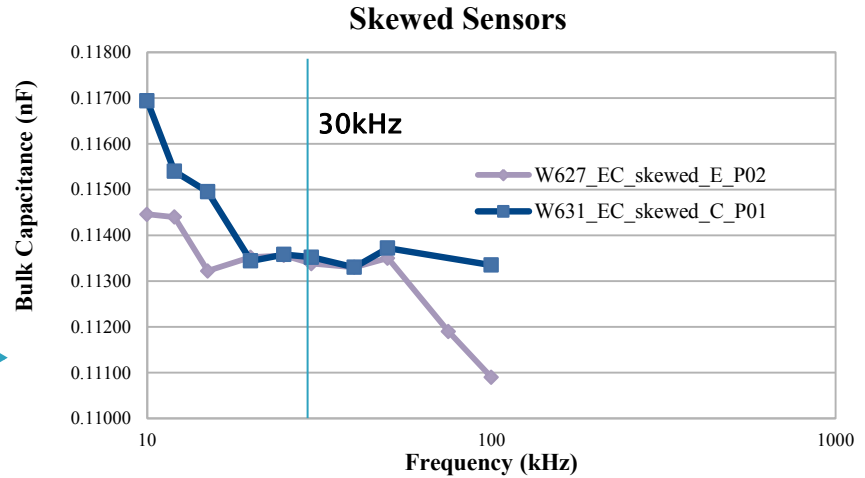
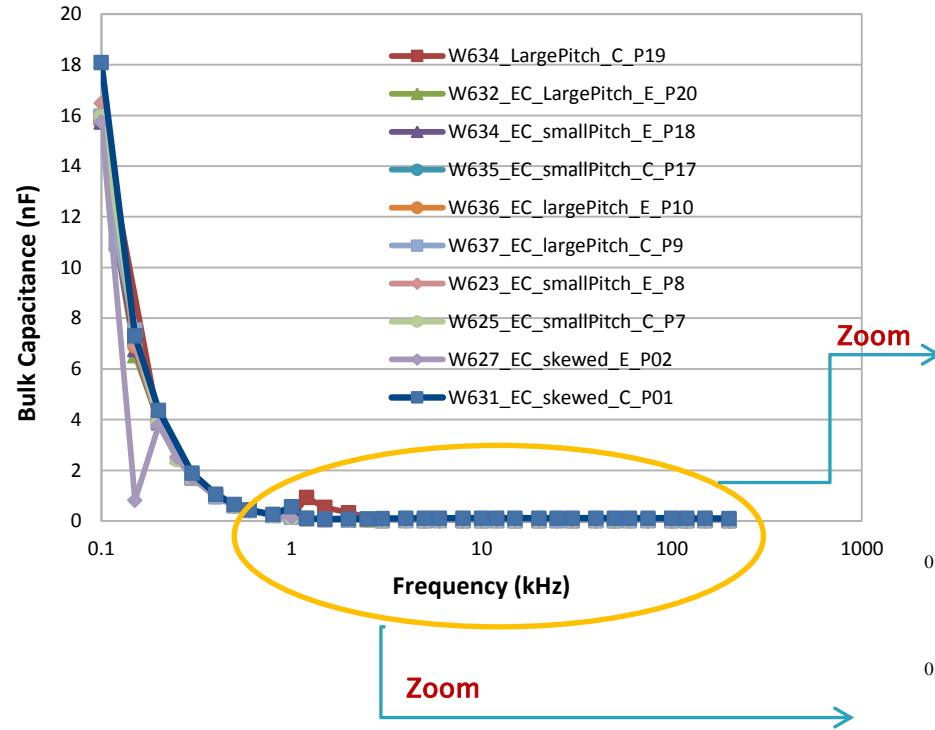
Strip Sensor Meeting – 16th January 2014

Urmila Soldevila (Valencia, IFIC-CSIC)

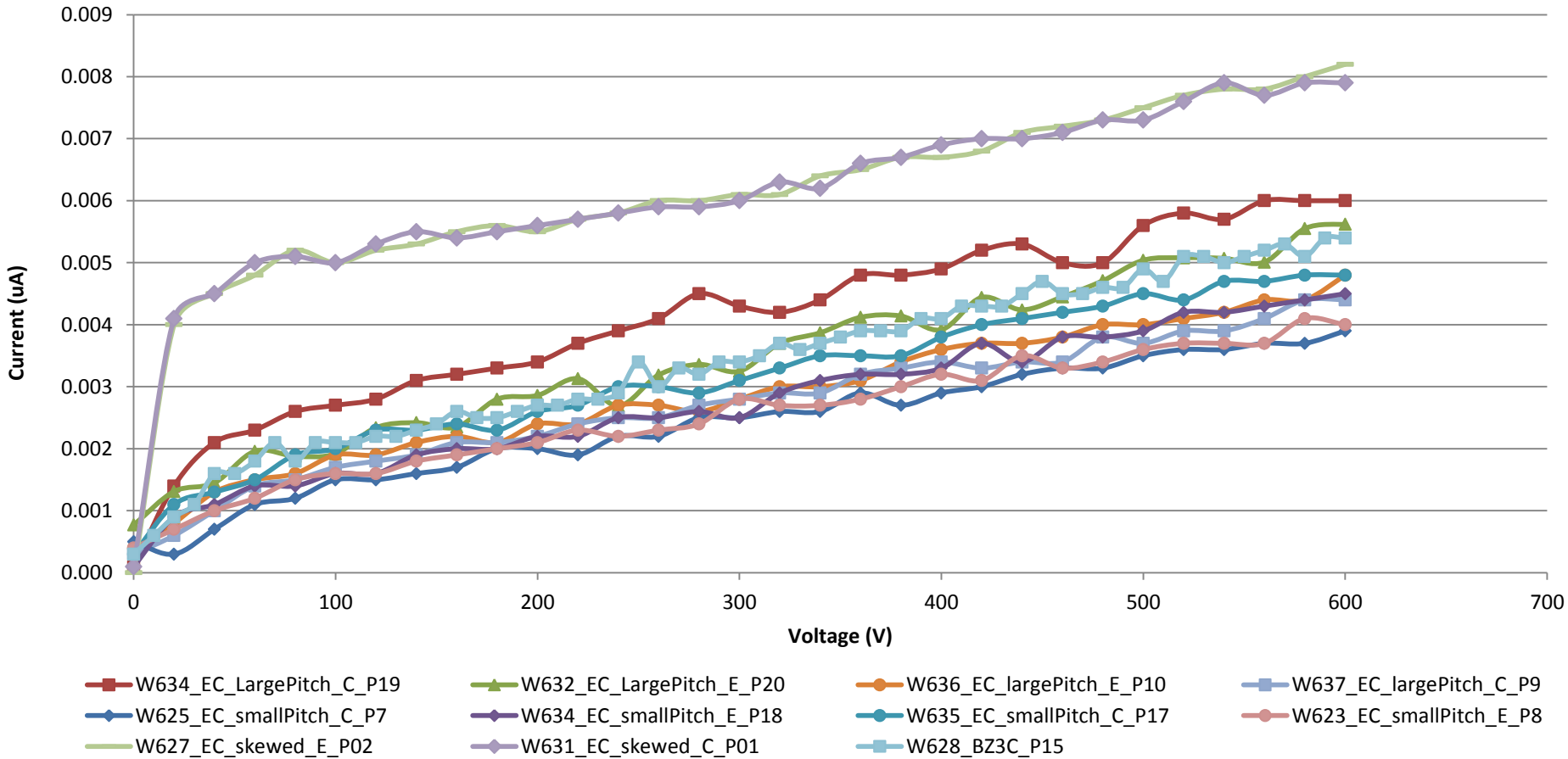
## Non-irradiated samples

Sensors	
W634_EC_LargePitch_C_P19	DC-gang
W632_EC_LargePitch_E_P20	DC-gang
W634_EC_smallPitch_E_P18	DC-gang
W635_EC_smallPitch_C_P17	DC-gang
W636_EC_LargePitch_E_P10	AC-gang
W637_EC_LargePitch_C_P9	AC-gang
W623_EC_smallPitch_E_P18	AC-gang x Al Label:-P10
W625_EC_smallPitch_C_P7	AC-gang
W627_EC_skewed_E_P02	x Al Label:C-P01
W631_EC_skewed_C_P01	
W628_BZ3C_P15	

# ATLAS12A → Frequency Study

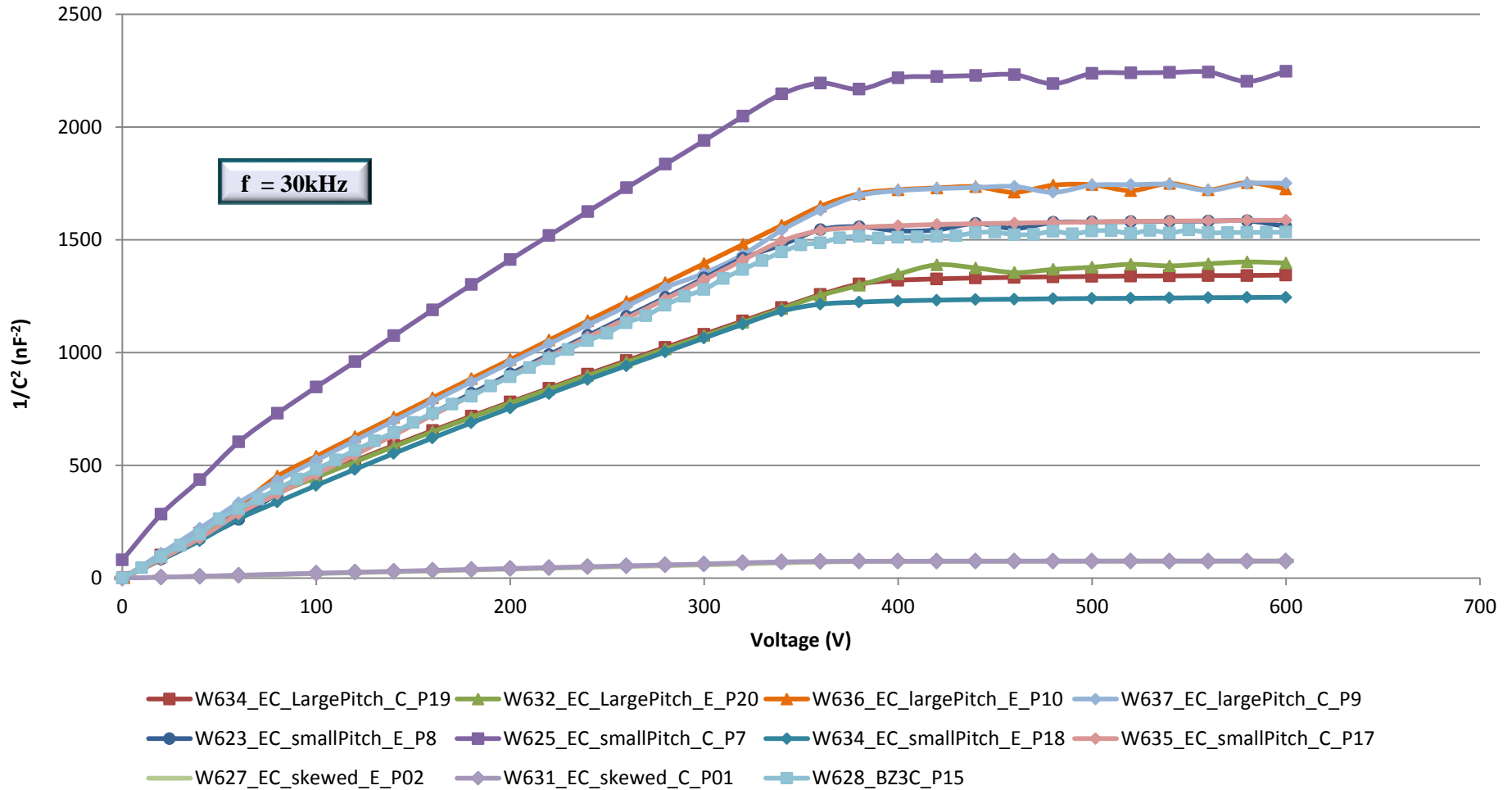


# ATLAS12A → IV Curves



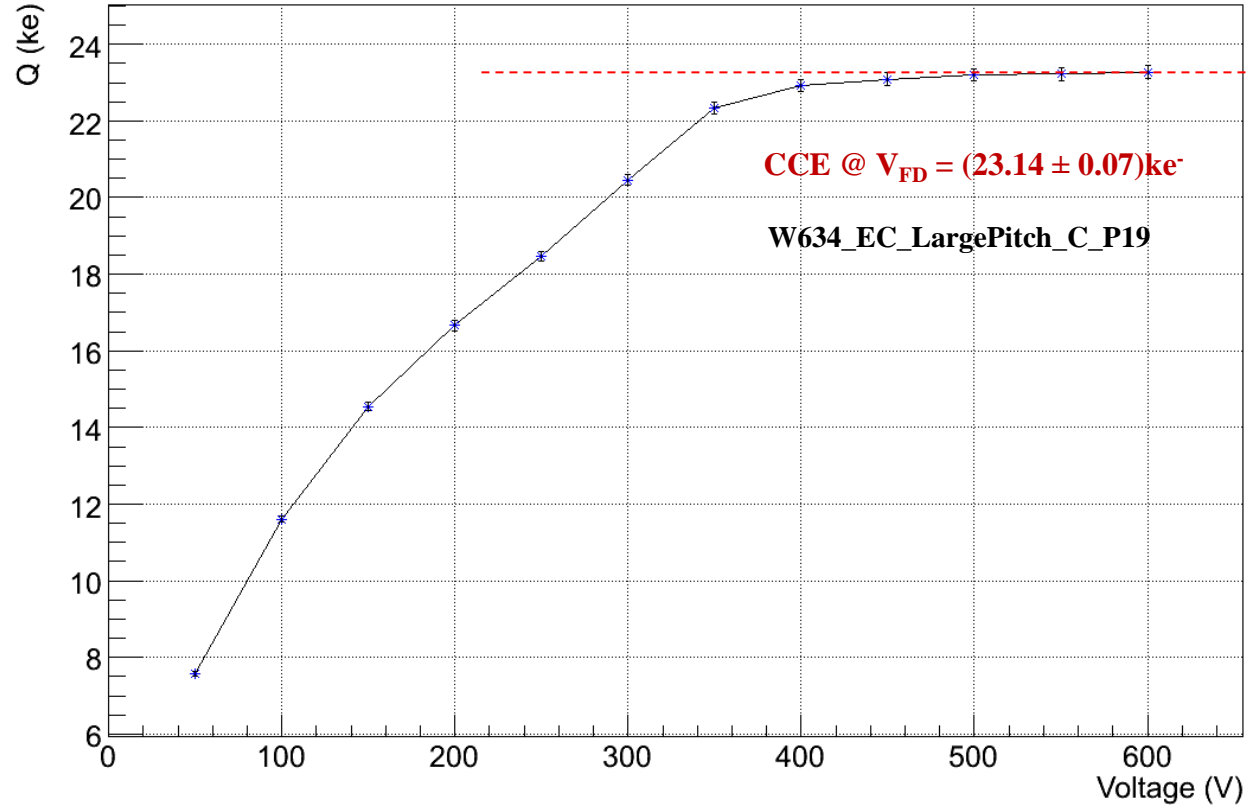
- ▶ No breakdown observed up to 600/1000V sensor bias
- ▶ Tec. Spec. :  $I @ 600\text{V} < 2\mu\text{A}/\text{cm}^2 \rightarrow I @ 600\text{V} < 9\text{nA}/\text{cm}^2$

# ATLAS12A → CV Curves



► Tec. Spec. :  $V_{FD}$  (V) < 300V (resistivity of > 4kΩcm) →  $V_{FD}$  (V) = (363.2 ± 12.1) V

## Collected Charge Efficiency



- Good Agreement with other institutes
- Barrel Mini CCE measurements ongoing to compare

- Complete CCE measurements with barrel mini
  - Coupling Capacitance measurement
  - Interstrip Capacitance measurement
  - Interstrip resistance measurement
- 
- Start studies with irradiated samples
    - from UK, Ljubljana and Cyric

**In progress**

- Backup slides -



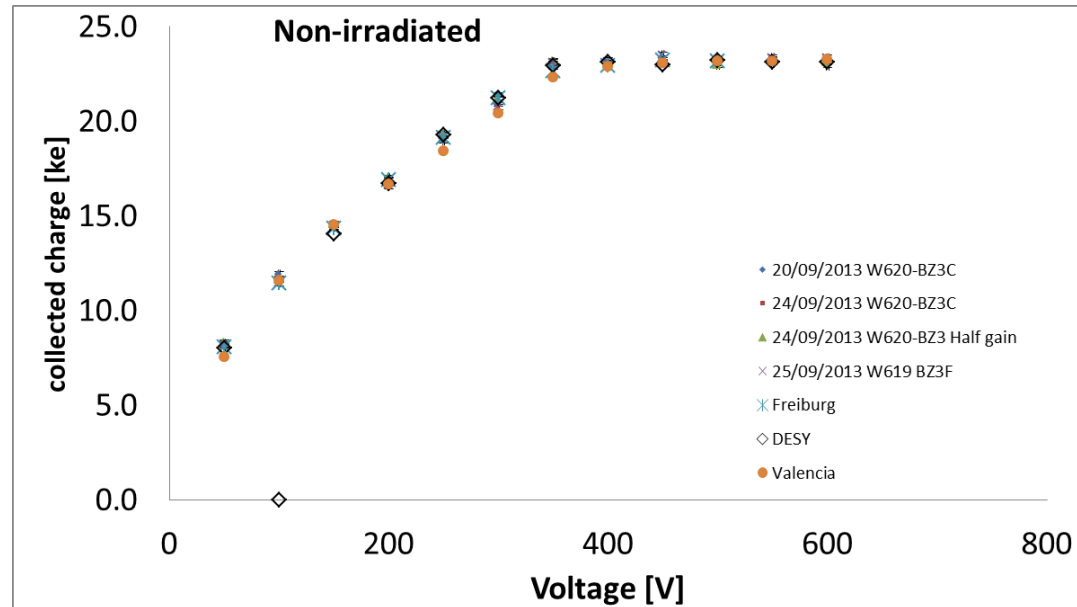
## Non-irradiated samples

Sensor	I ( $\mu$ A) @200V	I ( $\mu$ A) @600V	V <sub>FD</sub> (V)	C(nF) @400V
W634_LargePitch_C_P19	0,00340	0,00600	370 $\pm$ 5	0,027520
W632_EC_LargePitch_E_P20	0,00286	0,00562	383,9 $\pm$ 5.1	0,027240
W636_EC_largePitch_E_P10	0,00240	0,00480	376,8 $\pm$ 3.6	0,024100
W637_EC_largePitch_C_P9	0,00220	0,00440	383,6 $\pm$ 3.3	0,024130
W634_EC_smallPitch_E_P18	0,00220	0,00450	343,8 $\pm$ 3.3	0,028525
W635_EC_smallPitch_C_P17	0,00260	0,00480	356 $\pm$ 1.2	0,025300
W623_EC_smallPitch_E_P8	0,00210	0,00400	357,9 $\pm$ 2.2	0,025485
W625_EC_smallPitch_C_P7	0,00200	0,00390	333,7 $\pm$ 6.5	0,021234
W627_skewed_E_P02	0,0055	0,0082	367.4 $\pm$ 1.3	0,11554
W631_skewed_C_P01	0,0056	0,0079	362.8 $\pm$ 1.7	0,11534
W628_BZ3C_P15	0,0027	0,0054	359.2 $\pm$ 2.7	0,025725

# Pre-irradiated (Normalization)



- Received pre-irradiated measurements from DESY, Freiburg, Liverpool and Valencia
  - Using agreed techniques, DESY, Freiburg and Liverpool measurements agree to 500 e<sup>-</sup> full width
  - Valencia used EC large pitch mini
    - Maximum disagreement 700e<sup>-</sup>
  - Liverpool measured a BZ3C and BZ3F from two different wafers
    - Agreed to 0.8%
  - Normalizations will then be used for all future charge collection measurements



- Freiburg and Liverpool checked against previous gain normalization using Micron pieces (physical thickness for Micron, capacitance thickness for HPK)
- Freiburg results agree to +0.2%
  - Liverpool 2 Micron gain results agree to -3.0% and +1.9%

Looks like ATLAS12 really has 302 μm active thickness