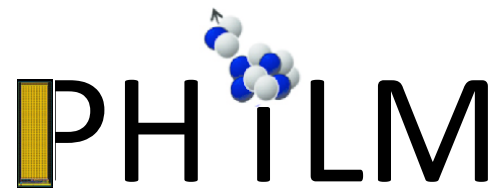


# Particle identification with High spatial resolution and Low Material budget



## Kickoff Meeting

\* follow-up of TIIMM and IMPACT projects

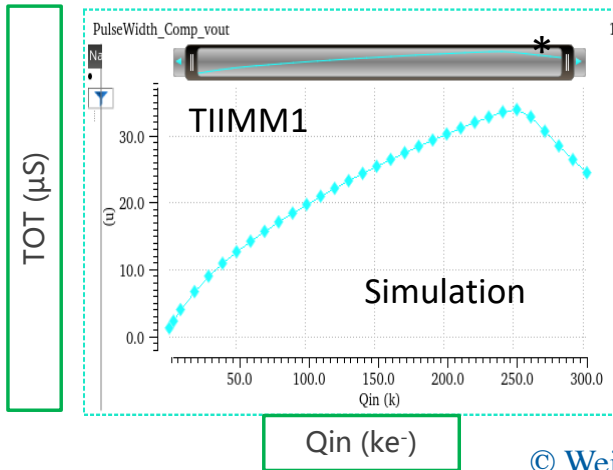
## Remind of the workpage goals



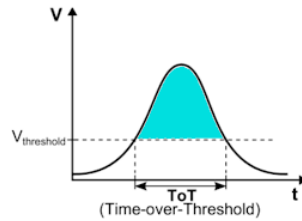
- Rate:  $< 1 \text{ MHz/cm}^2$
- Area: few  $\text{cm}^2$  (2x2 or 1x3  $\text{cm}^2$ )
- Power dissipation:  $< 200 \text{ mW/cm}^2$
- Charge output (ToT) over 6 bits
- Pixel pitch 20 to 40  $\mu\text{m}$
- Epitaxial layer: 25-50  $\mu\text{m}$

## Dynamic range:

**TOT: Time Over Threshold**



© Weiping REN

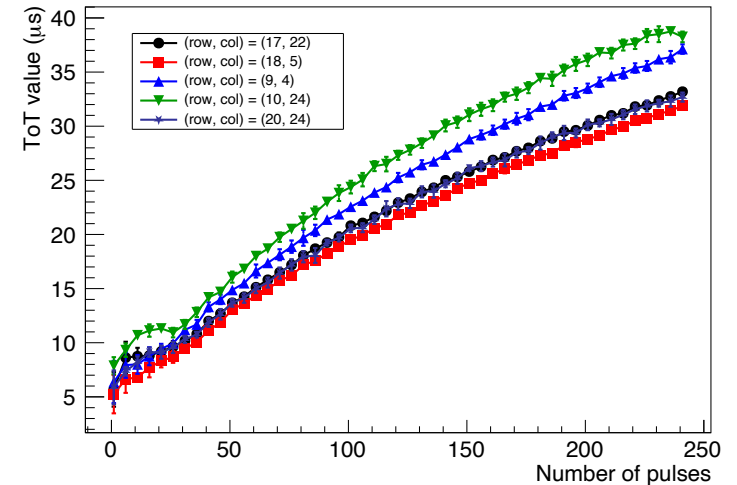


TIIMM0: range < 110 ke-

TIIMM1: range < 250 ke-

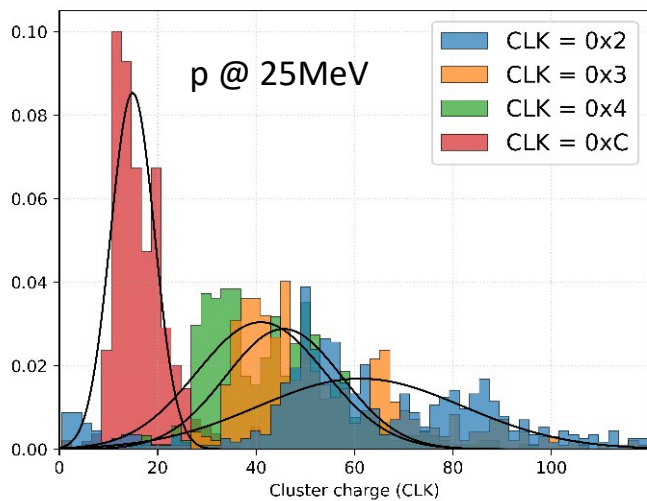
TIIMM1b: range < 700 ke-

## TIIMM1B: laser test



© Luca Federici, Maciej Kachel, Ch. Finck

© Elio Sacchetti, Maciej Kachel



- The pre-scaler adapted to ToT signal dynamics
  - Useful for high dynamics signals

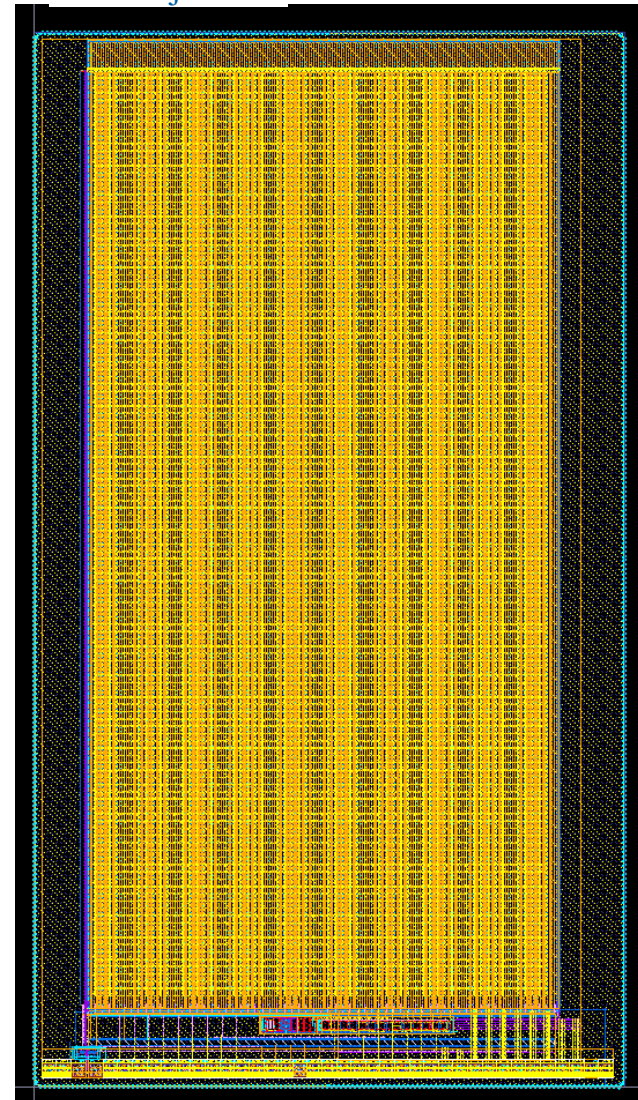
➔ Assess the analog part

## □ Sensor:

- Front end => TIIMM1B:
  - Linearity up to  $\sim 800$  ke-
- TOT measurement:
  - 12bit
- Matrix:
  - Pixels: 128x64
  - Pitch: 50  $\mu\text{m}$
  - Active area: 6.4 x 3.2 mm<sup>2</sup>

➔ Assess the digital part

© Maciej Kachel



## □ Time line (48 months)

- M1-M10: test of IMPACT sensor
- M1-M18: multi-plane DAQ development, advanced tests with IMPACT
- M6-M24: design of PHILM ( $\sim\text{cm}^2$ ) sensor
- M24-M36: test of PHILM sensor
- M30-M48: assembly of multi-plane system with PHILM, beam tests for final demonstration

# H2030 - PHILM (ii)



## Budget (asked):

Received: -20 %

• Multi-project run at Tower Jazz for PHILM prototypes	70 k€	
• Development of data acquisition system + Mech	24 k€	
• 1 PhDs contracts ( 3 years)	120 k€	
• Travel money for meetings	10 k€	
	Total request:	224 k€
• overhead	56 k€	
	Total:	280 k€

224 k€

## Participants:

- J. Baudot, Ch. Finck, C. Hu-Guo, M. Kachel, W. Ren, R. Sefri and E. Spiriti

## Months-person (asked)

Put:

• Christian Finck (CRHC)	8m => 0.16 FTE		
• Jérôme Baudot (Prof):	6m => 0.125 FTE	➔ 28 months	➔ 5 months !!!!
• Rachid Sefri (IR):	8m => 0.16 FTE		
• Maciek Kachel (IR):	6m => 0.125 FTE		

# H2030 - PHILM (iii)



□ Budget (consequence):		Actually
• Run at Tower Jazz for large area sensor	70 k€	
• 1 PhDs contracts ( 3 years)	120 k€	
Total request:	190 k€	152 k€

➔ Need to discuss again the sharing of the money Run/PhD

# Calendar



## Deadlines:

- Deadline for first version of the grant agreement data : **26th of February**
- Deadline for the signature of the participants certified declarations : **19th of March 2026.**
- Deadline foreseen for the signature of the grant agreement : **5th of June 2026**
- The start date of the project should be: **1st of October 2026.**

Thank you

## Estimated budget request:

• <b>Multi-project run at Tower Jazz for PHILM prototypes</b>	<b>100 k€ -&gt; 70 k€</b>
• <b>Development of data acquisition system</b>	<b>100 k€ -&gt; 20 k€</b>
• Development of mechanical system	20 k€ -> 4 k€
• <b>1 PhDs contracts (3 years)</b>	<b>120 k€ -&gt; 120 k€</b>
• Travel money for tests	30 k€. -> 0 k€
• Travel money for meetings	10 k€. -> 10 k€
<b>Total request</b>	<b>380 k€ -&gt; 224 + (56) = 280</b>

## Participating and partner institutions :

- J. Baudot, L. Federici, Ch. Finck, M. Kachel, R. Sefri, IPHC - Strasbourg (France)
- E. Spiriti, INFN - Frascati (Italy)
- M. Toppi, M. Marafini, INFN - Roma (Italy)
- Ch. Schuy, GSI - Darmstadt (Germany)