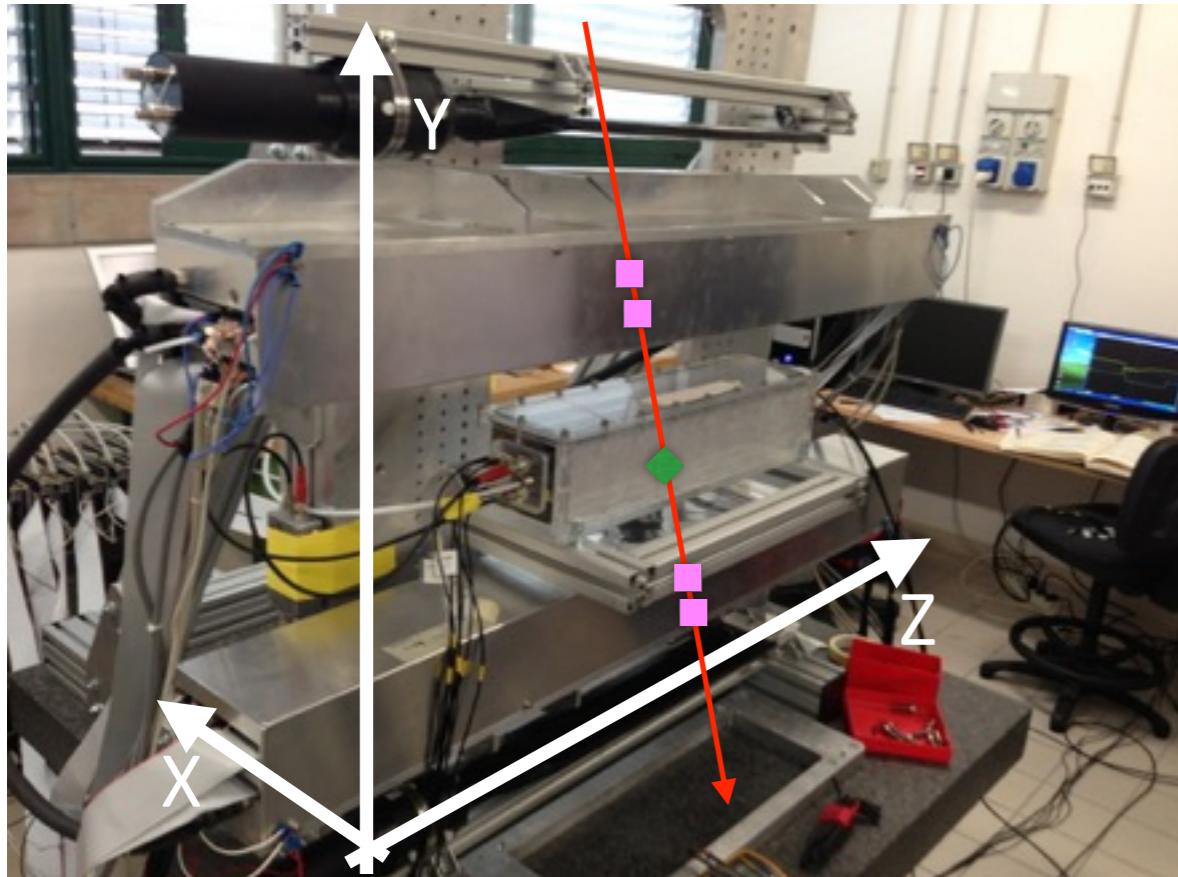
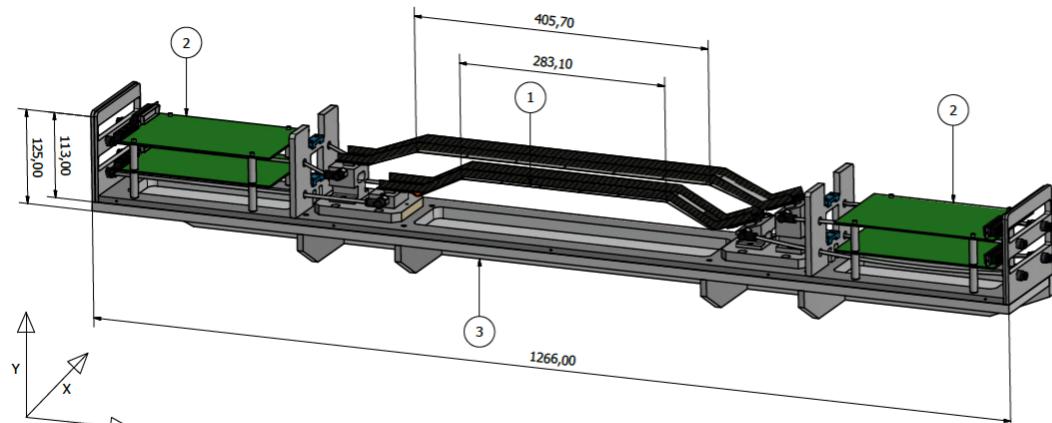


MEG II drift chamber characterisation with the silicon based cosmic ray tracker at INFN Pisa



The cosmic ray telescope

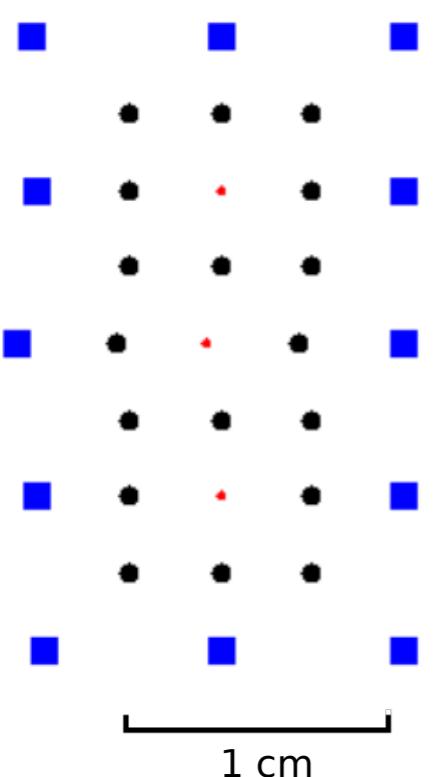
- **BaBar layer 4 and 5 spare module assembly**
- new **FPGA-based read-out**
- **high precision track reference** for a **prototype** under test
- **hit detection efficiency >90%** for **each module**



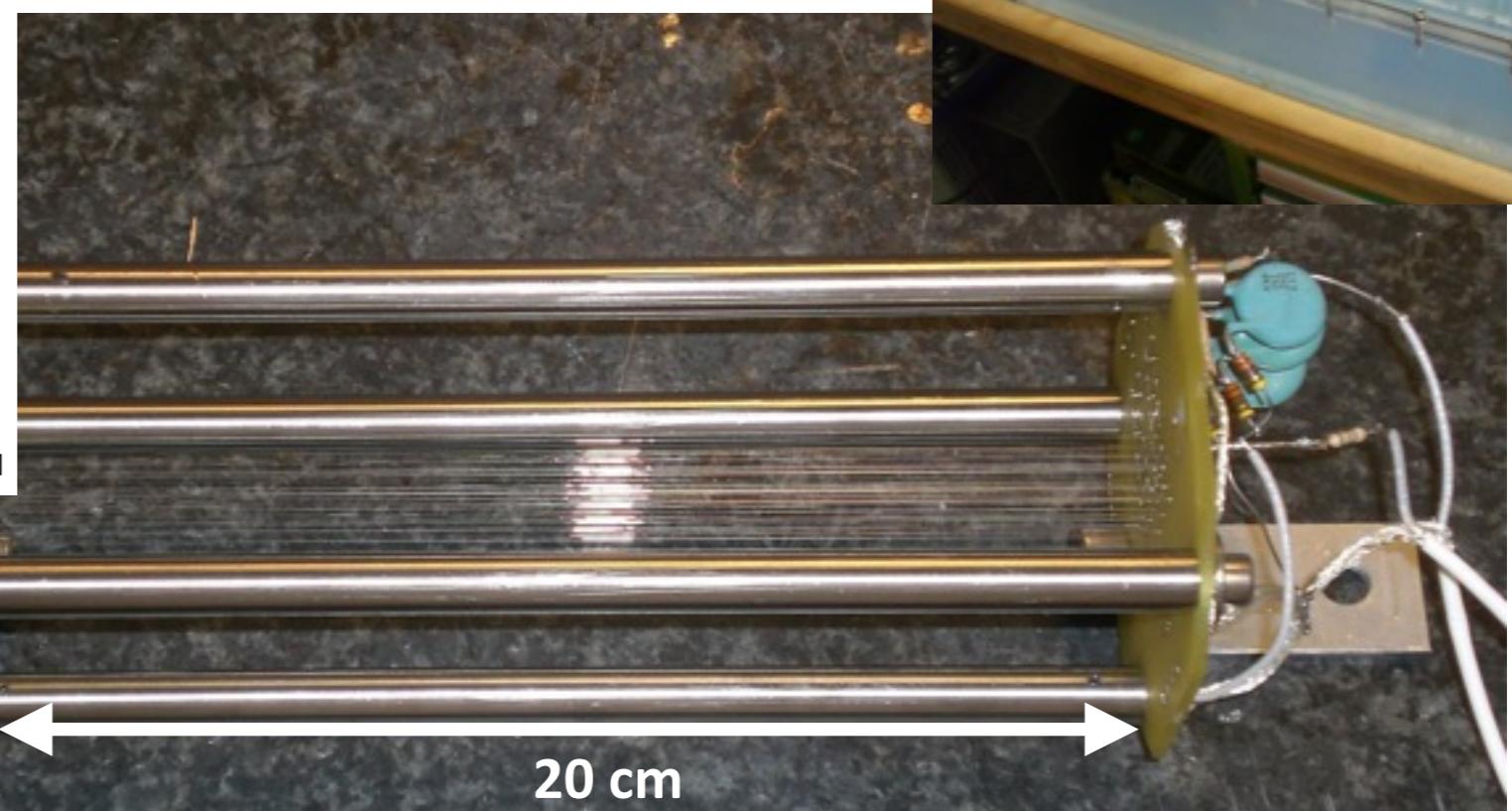
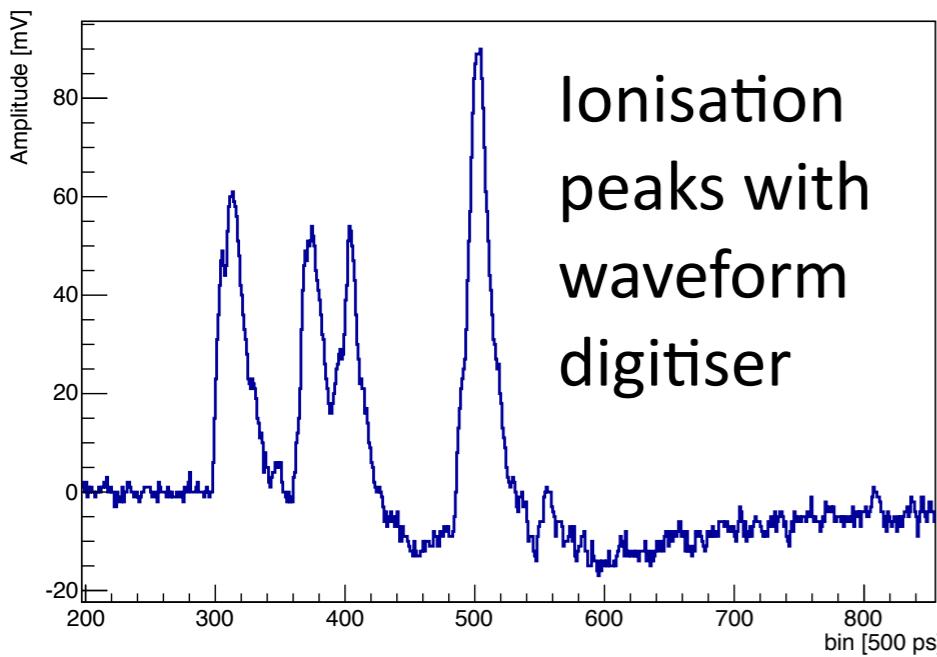
MULTIPLE-SCATTERING CONTRIBUTION TO TRACK PROJECTION RESOLUTION AS A FUNCTION OF DUT THICKNESS (IN UNITS OF 300 μm OF SI)

DUT thick (# SVT)	MS-uncert. (μm)	σ (μm , x — z views)
0	2	15 — 30
1	13	20 — 32
2	18	24 — 35
4	26	30 — 40

Detector under test



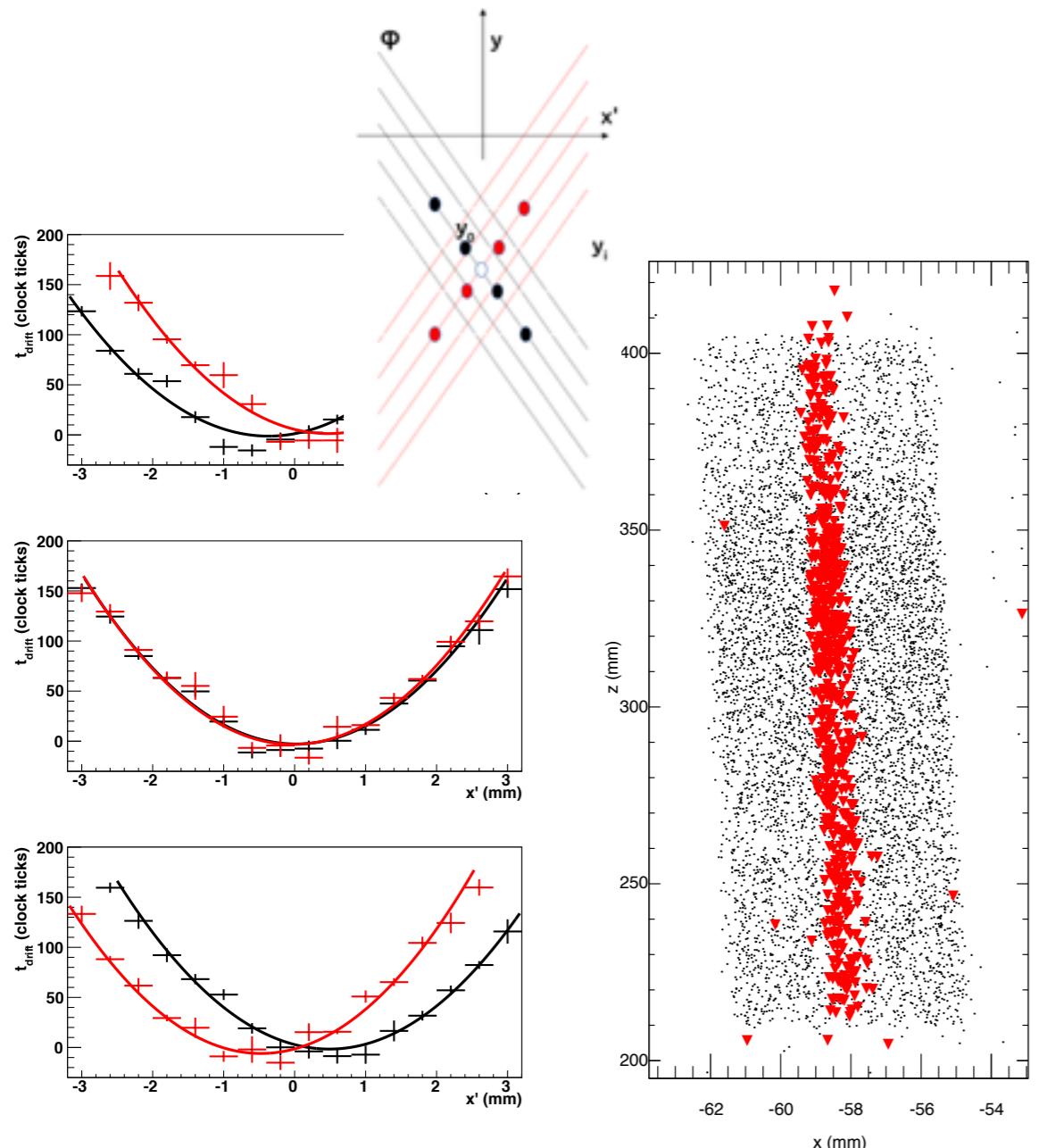
- 7mm squared cells
 - anode wire 20 μm (Au)W wire
 - 85-15% He-isobutane gas
 - low ionisation density: 13 cluster/cm
- operated at ~1600 V, 5x10⁵ gain
- read with waveform digitiser, 2GSPS, 300 MHz BW



20 cm

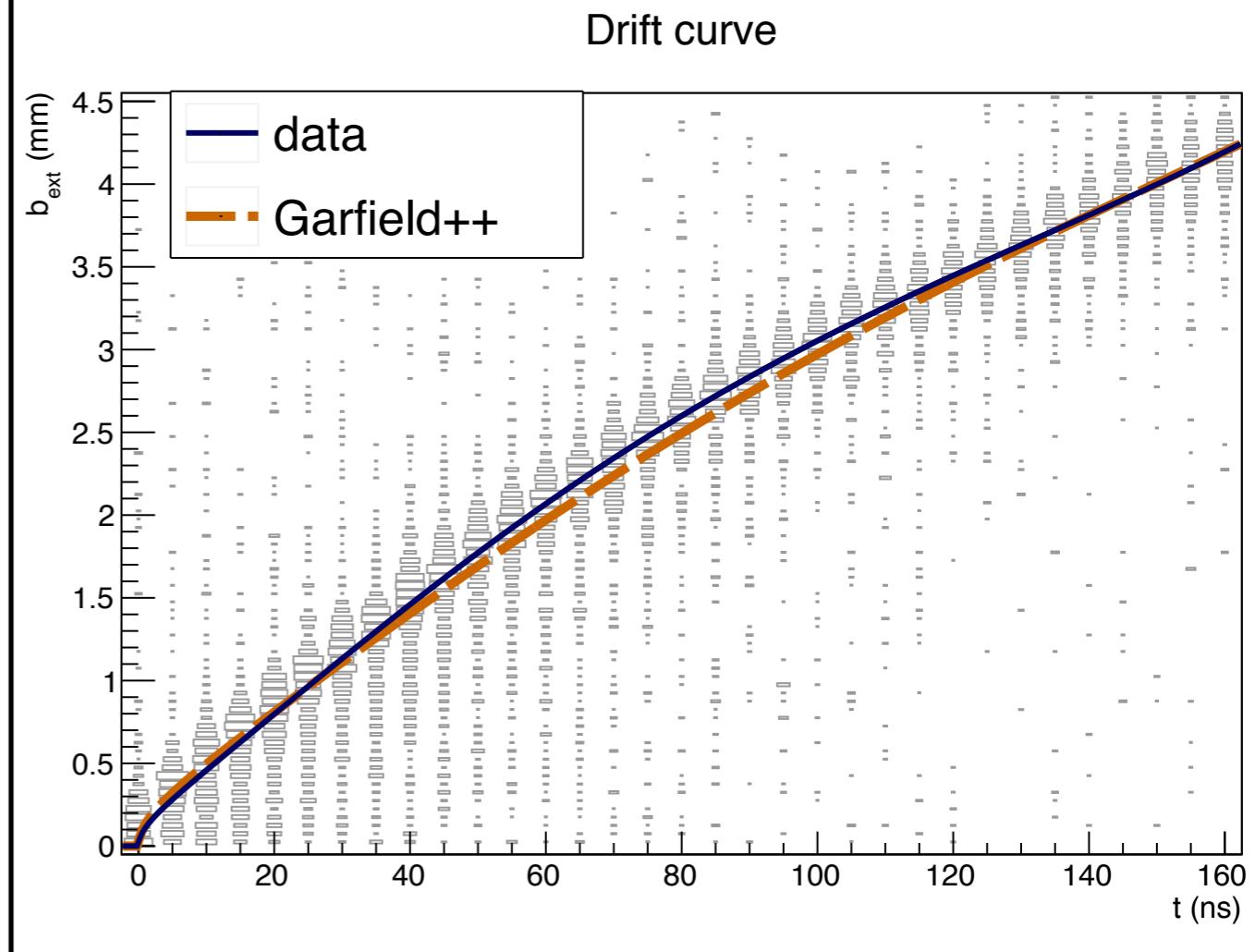
Alignment

- **wire imaging** for the **horizontal** plane
- **wire projection** for tracks with **opposite slant angles** for the **height**



T-XY tables

Extracted from **data**.
Compatible with **Garfield++**
predictions.



Results and perspectives

- **Resolution** of the order of **110 μm** in the **whole cell** by using only the **first** ionisation **cluster** information
- Expected **deviations** from **gaussian** distribution in particular for **events close** to the **wire**; **right** exponential **tail** starting **from distance δ from** the mean μ
 - **visible** thanks to the **external track reference**
 - due to the **low ionisation density**
 - **algorithm** to **solve** this issue by using the **other ionisation clusters under study**, presented by **Signorelli** in a **poster** at the **conference**

