

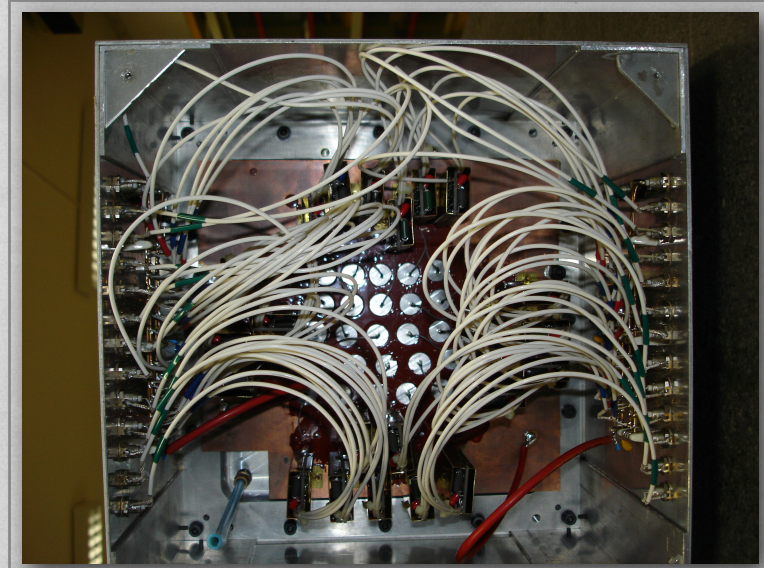
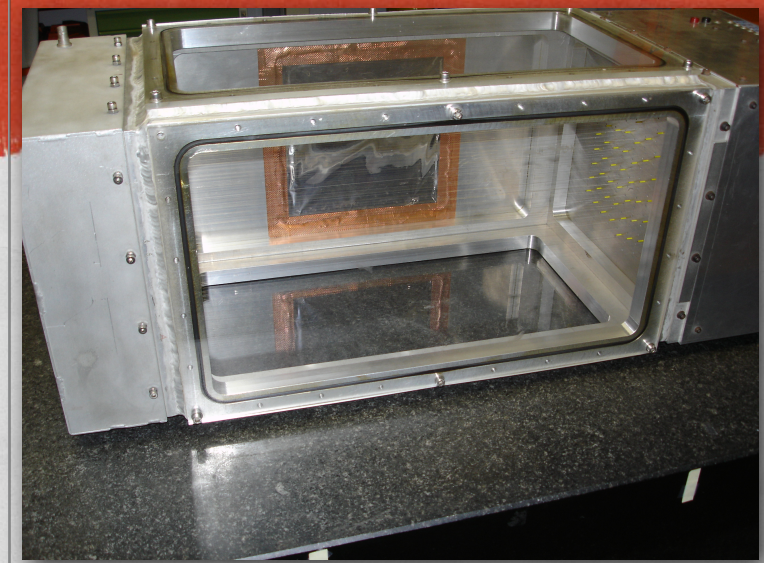
LAB ACTIVITIES AT LNF

A. Calcaterra, R. de Sangro, G. Finocchiaro, M. Piccolo

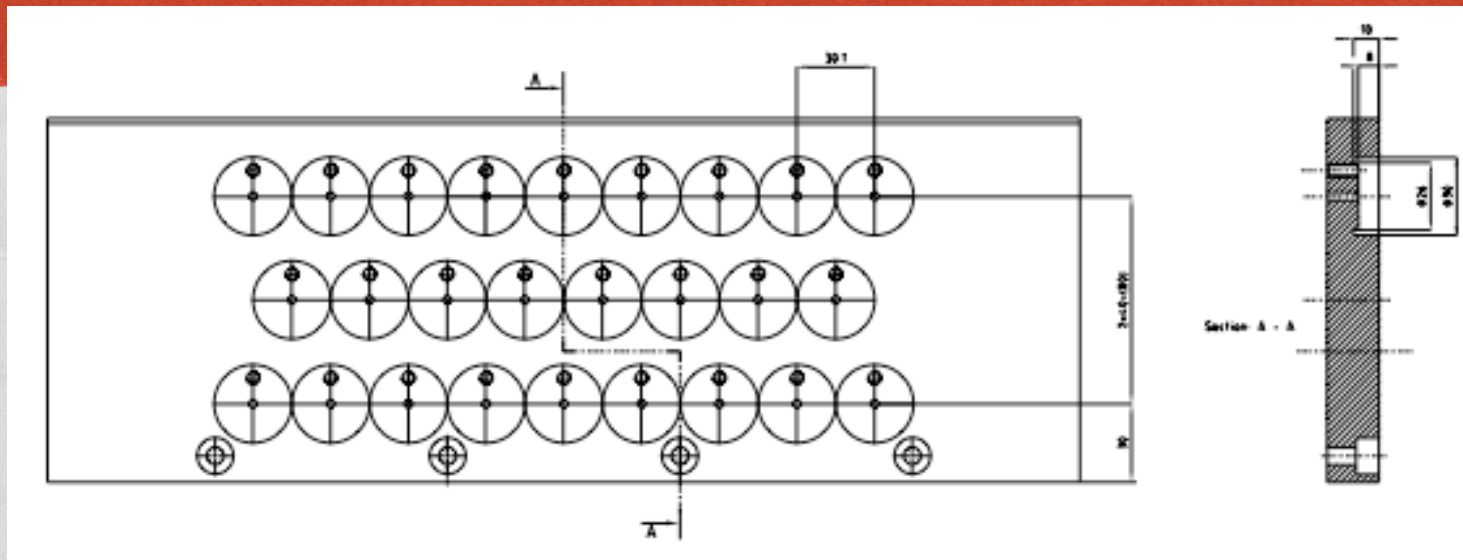
INFN - LNF

PROTOTYPES

- We have on hand a KLOE prototype which we plan to use
 - Equipped with FE electronics and HV distribution
 - Square 2:1 cells geometry $2 \times 2 \text{ cm}^2$
- New prototype
 - 2 or 3 side by side $\sim 6 \times 3$ cell wedges with different geometries. Various possibilities
 - BaBar hex, $2 \times 2 \text{ cm}^2$ (reference)
 - Square $1 \times 1 \text{ cm}^2$
 - BaBar hex, $1 \times 1 \text{ cm}^2$
 - BaBar hex, $1 \times 2 \text{ cm}^2$
 - Mechanics and stringing in ~ 2 months
 - Need new FE electronics
 - Re-use of KLOE under investigation



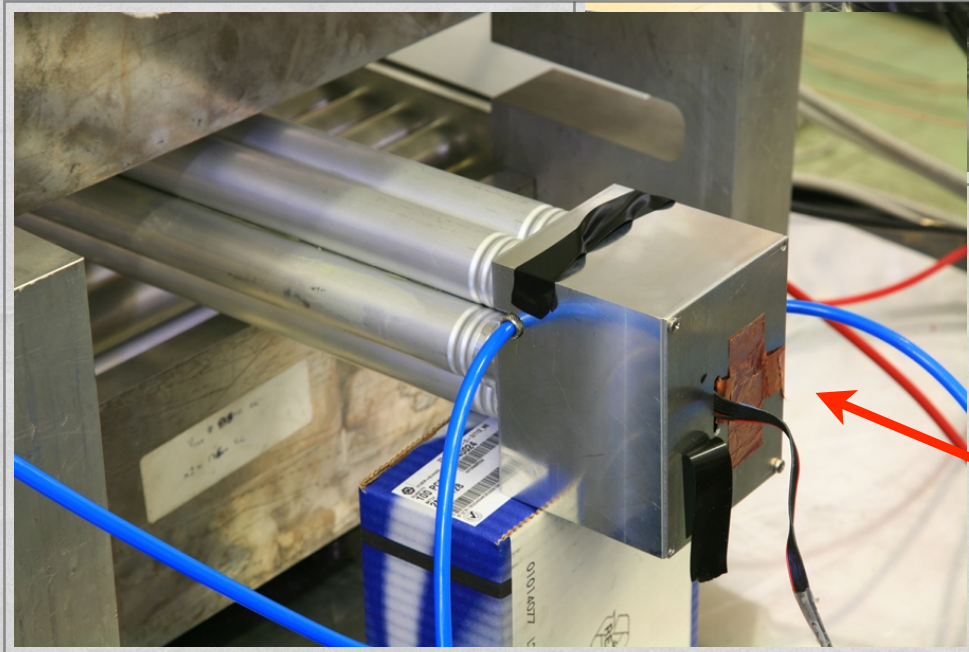
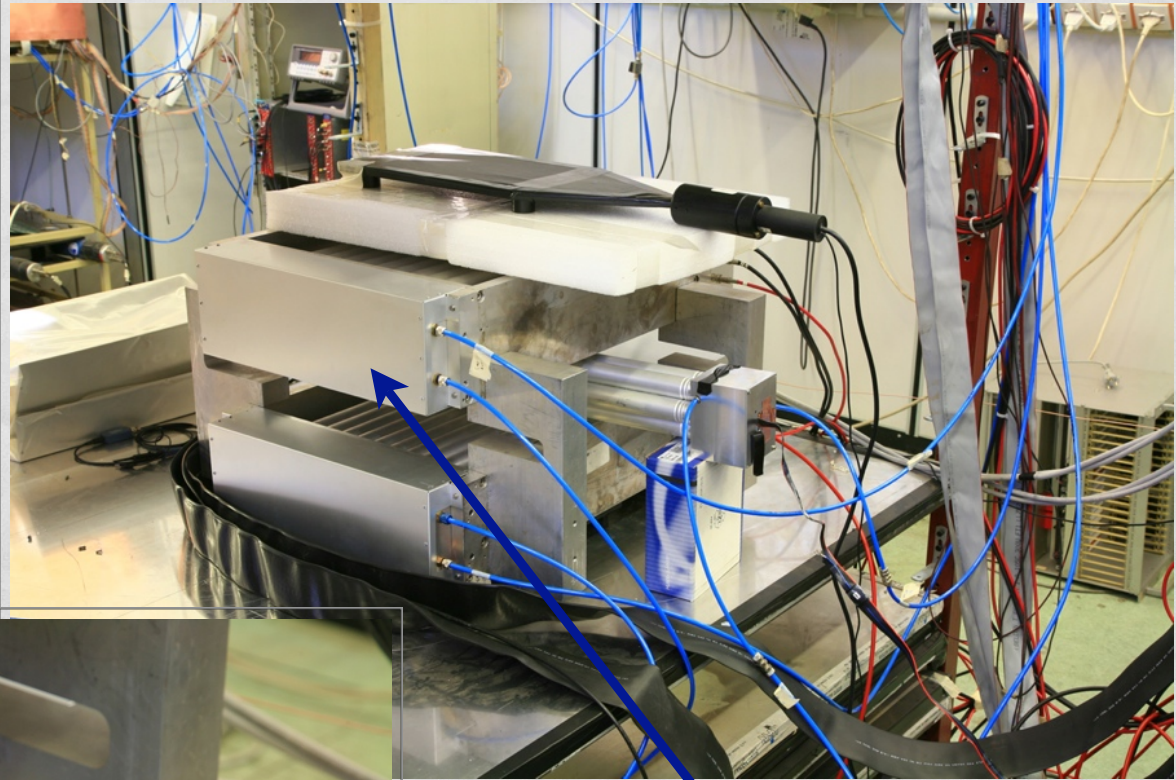
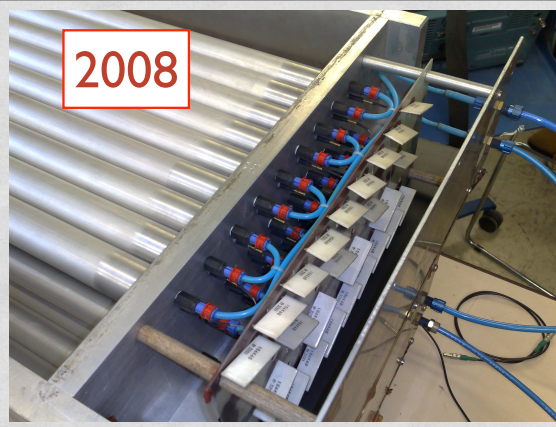
EXTERNAL TRACKER



- Two identical assemblies of 26 tubes each
- Operated in LS mode
- 3 cm diameter, 100 μm wires
- 40%-60% Ar-iC₄H₁₀ mixture

EXTERNAL TRACKER

- Read out electronics
 - 52 channels discriminator + HV distribution
 - ☑ commissioned
- DAQ
 - 52 TDC channels read out
 - ☑ commissioned
- Gas system
 - Recent fault in a couple of flow meters
 - re-calibration needed, now OK
 - The system also developed some leaks, which are being searched for

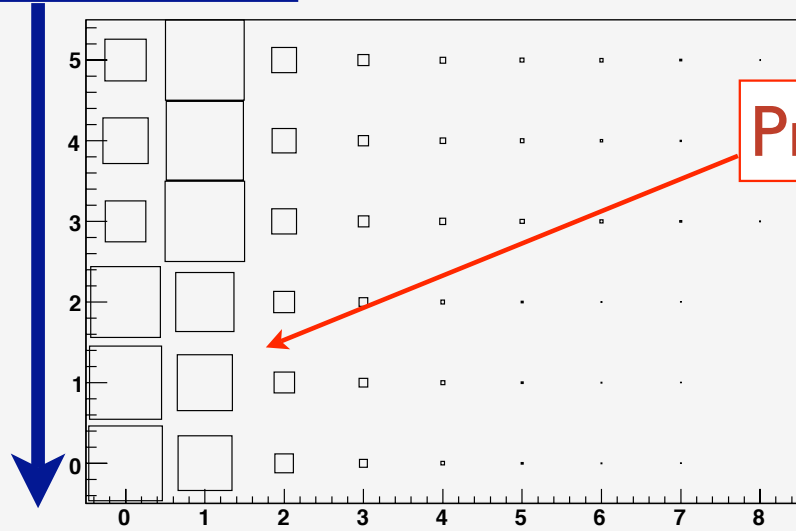


New electronics and HV distribution on opposite side

Test tubes for mechanical quenching

EXTERNAL TRACKER

Gas Flow



Problem

Layer Occupancy



Layer Multiplicity

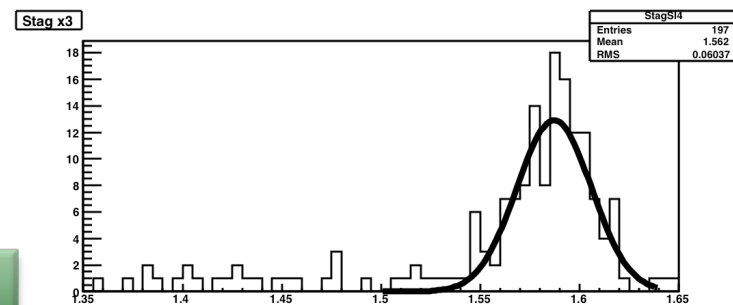
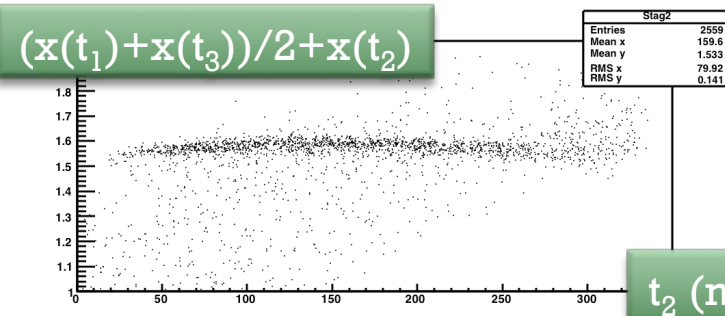
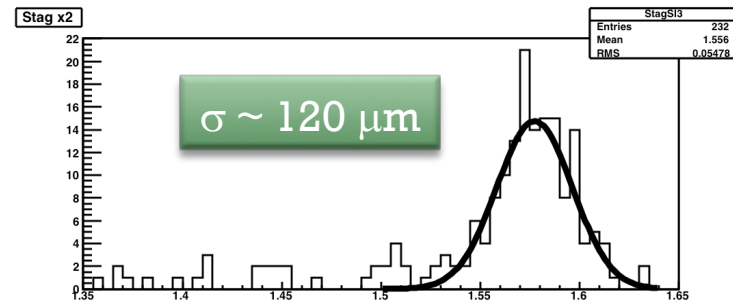
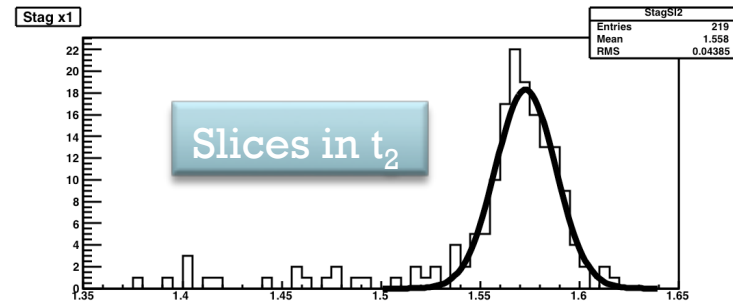
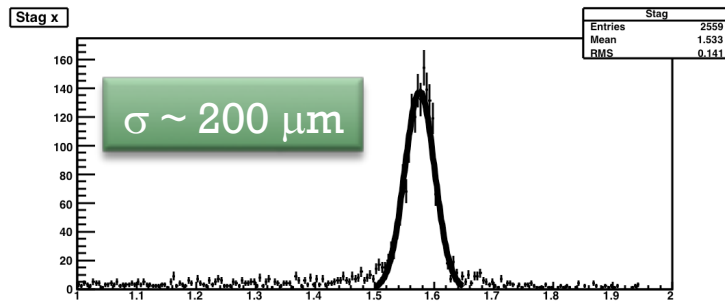
Layer Occupancy

Looks like a leak between the two trackers

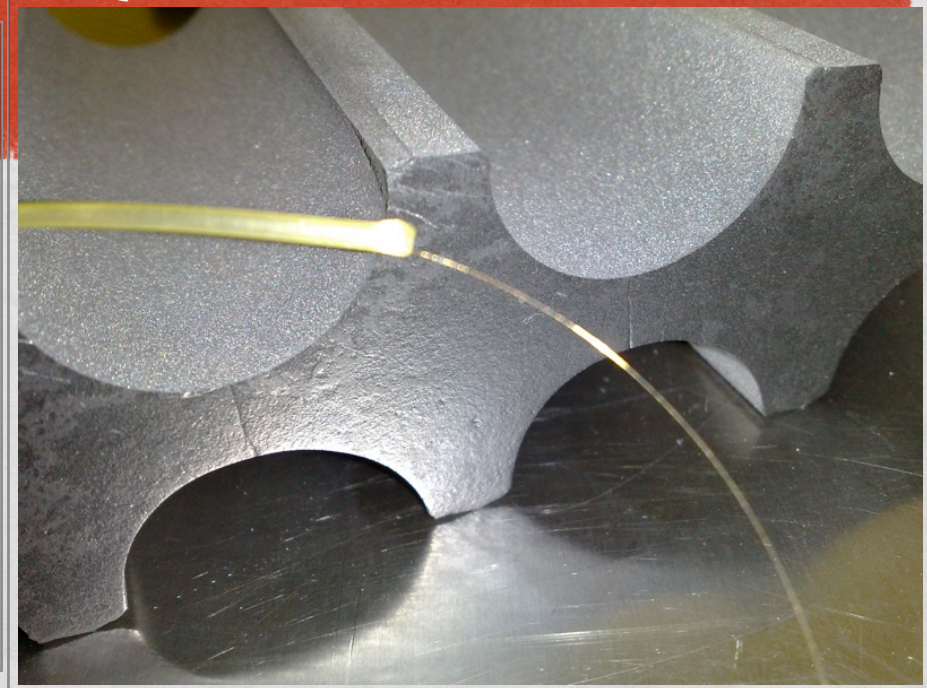
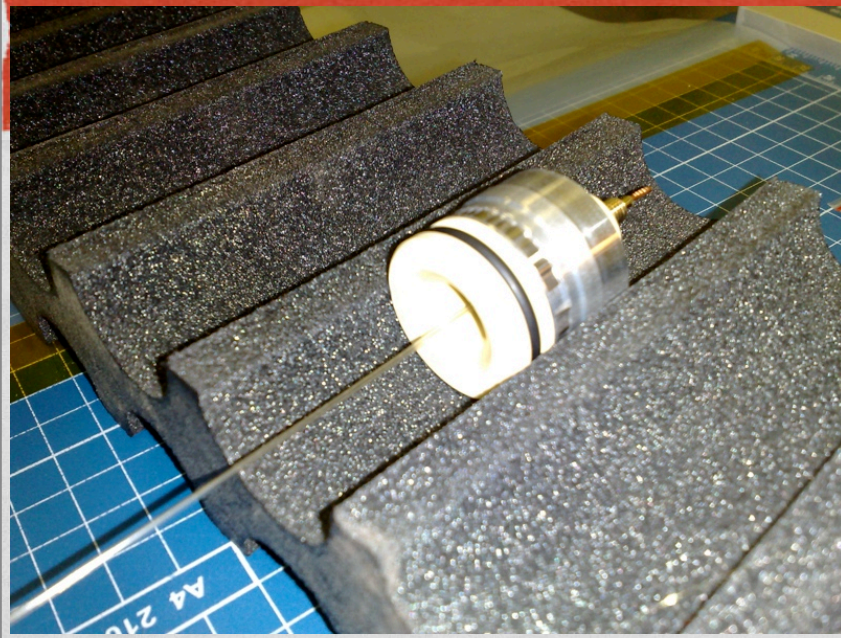
EXTERNAL TRACKER

Performances

2008

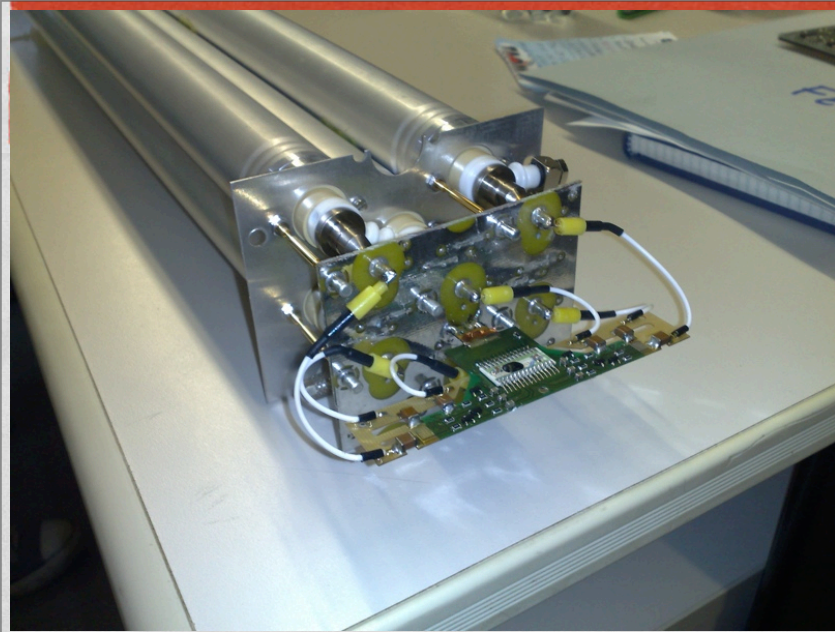


MECHANICAL QUENCHING

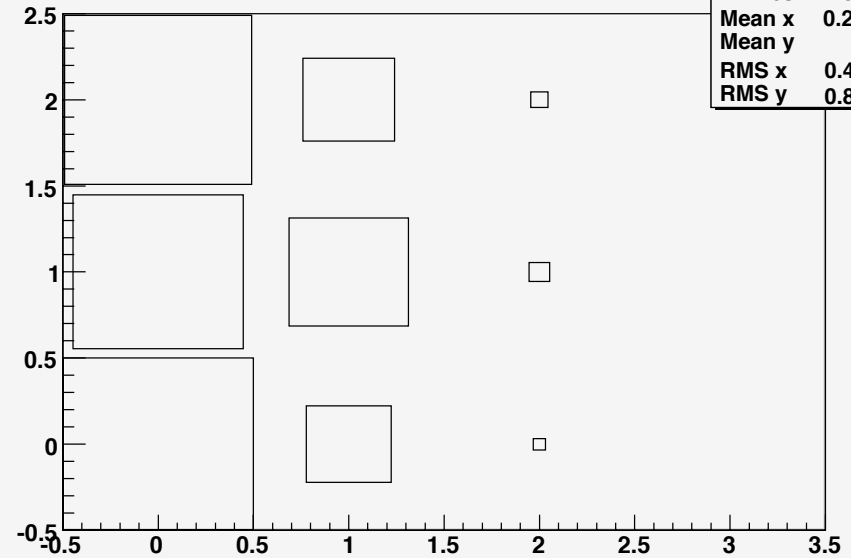


- Shield final part of sense wire with a plastic tube
- Tried two different plastics

MECHANICAL QUENCHING



Layer Multiplicity Tubetti



Number of hit per layer

Middle layer: control tubes
without plastic screen

PLANS

- Fix test setup and take data to
 - Obtain space-time relations for the external tracker tubes
 - Measure response of the test tubes as a function of the position of the tracks along the wires
 - Detailed study the “mechanical quenching”
 - Study possible long term effects
- Build new prototypes
 - Study efficiency and resolution of different cell configurations and gas mixtures