
CLAS12

meeting of Central Detector group

Micromegas update

Two type of pre production detector are tested at Saclay

- Standard bulk detector (5 detectors)
- Resistive bulk detector (5 detectors)

The seize of the object, thus the mechanics, and their electrical connection are the same.

The choice will be done in December 2012.

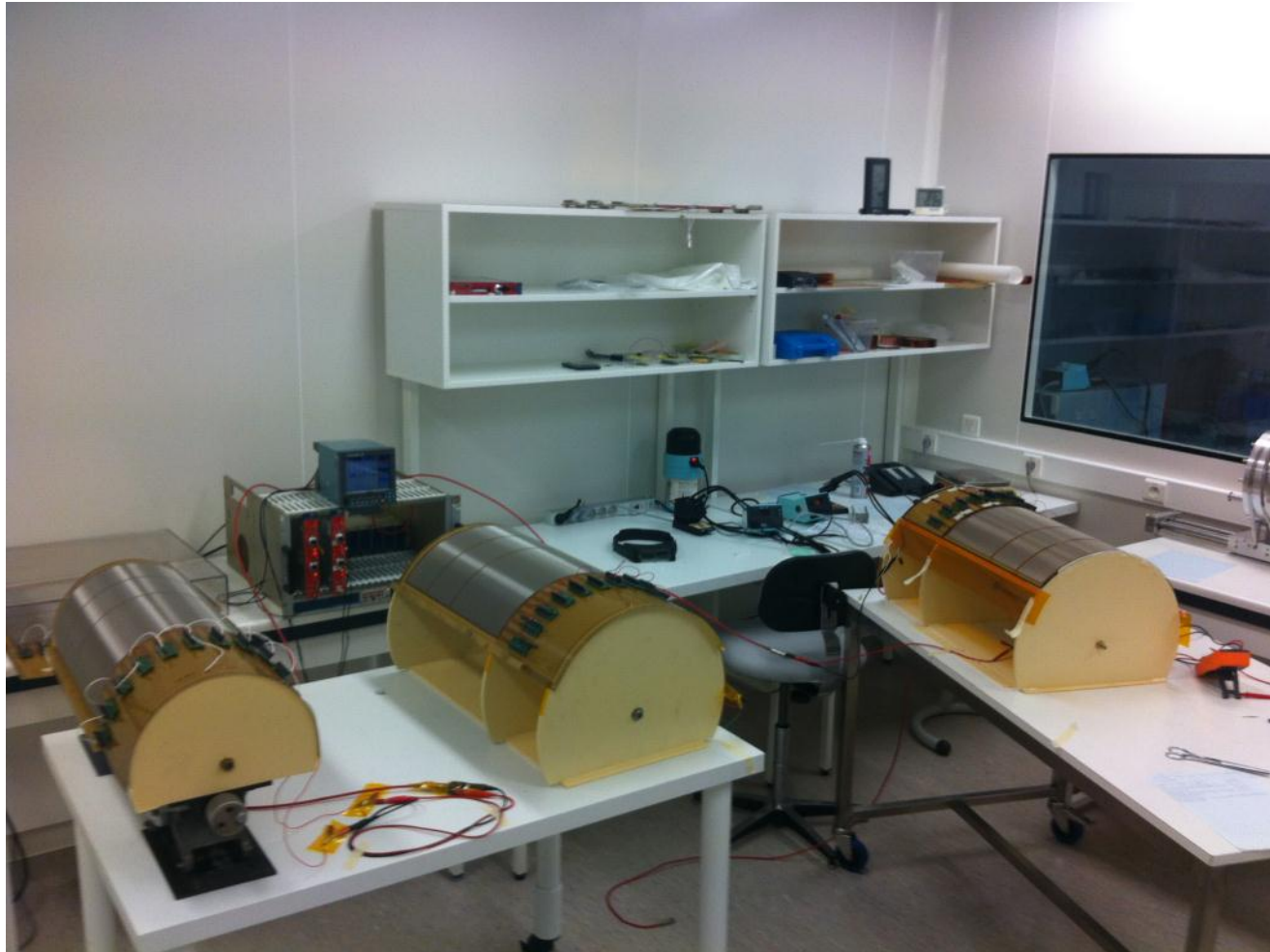
- The resistive solution must be efficient on thin and curve detector
- Resistive detector should be manufacture in serial condition.

The main advantage of resistive bulk is the possibility to run without spark.

The goal of the of pre production detector

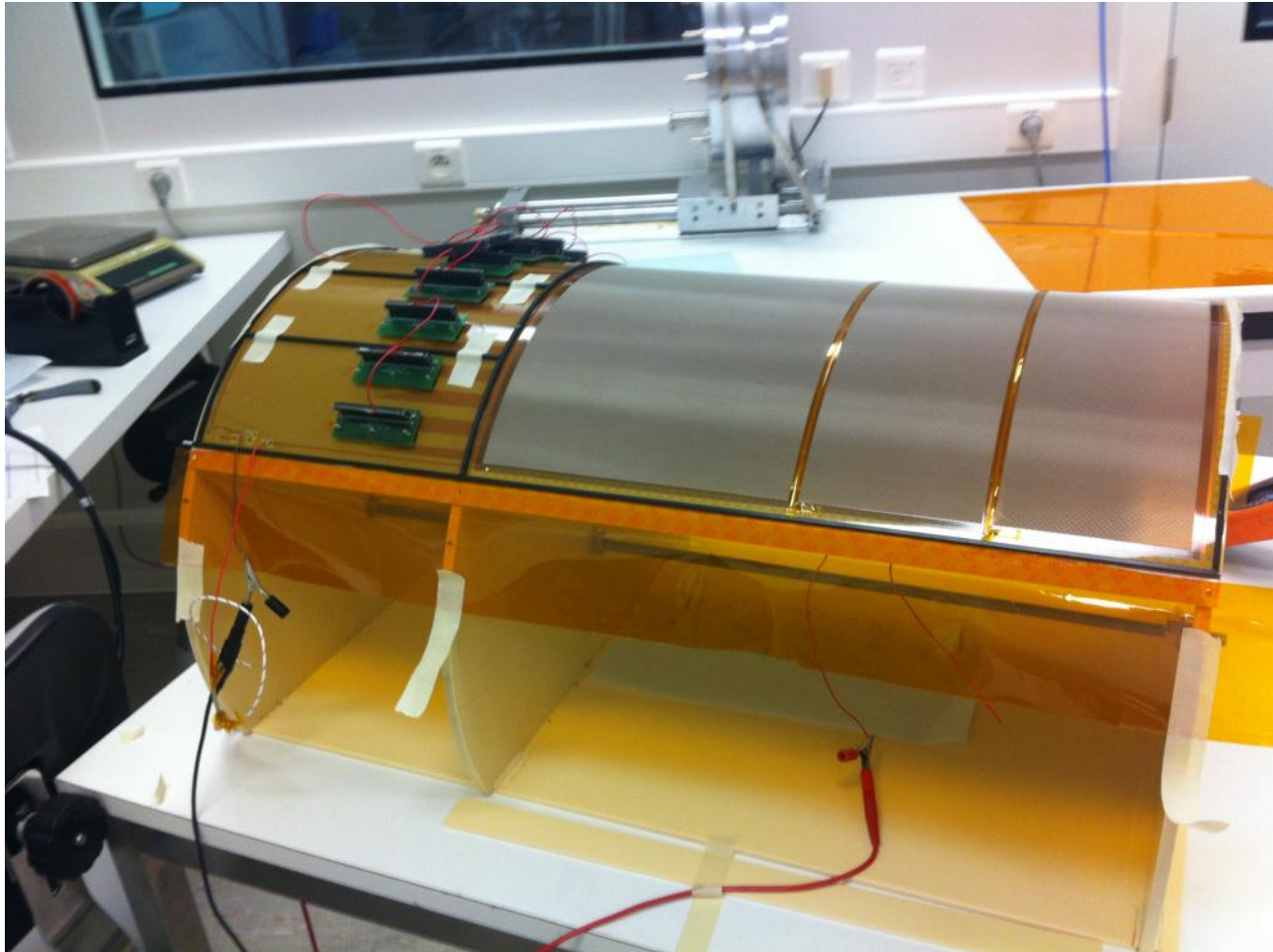
- Validate the detector homogeneity on 5 realization
- Validate the mechanics (carbon frame)
 - A patent is under progress “détecteur autoporté courbe”
 - Picture and drawing should not be available outside collaboration
- Validate the integration procedures and tooling
- Validate the tests procedure on cosmic test bench

The production of the 18 (+6 spares) detector of the barrel will start in 2013.

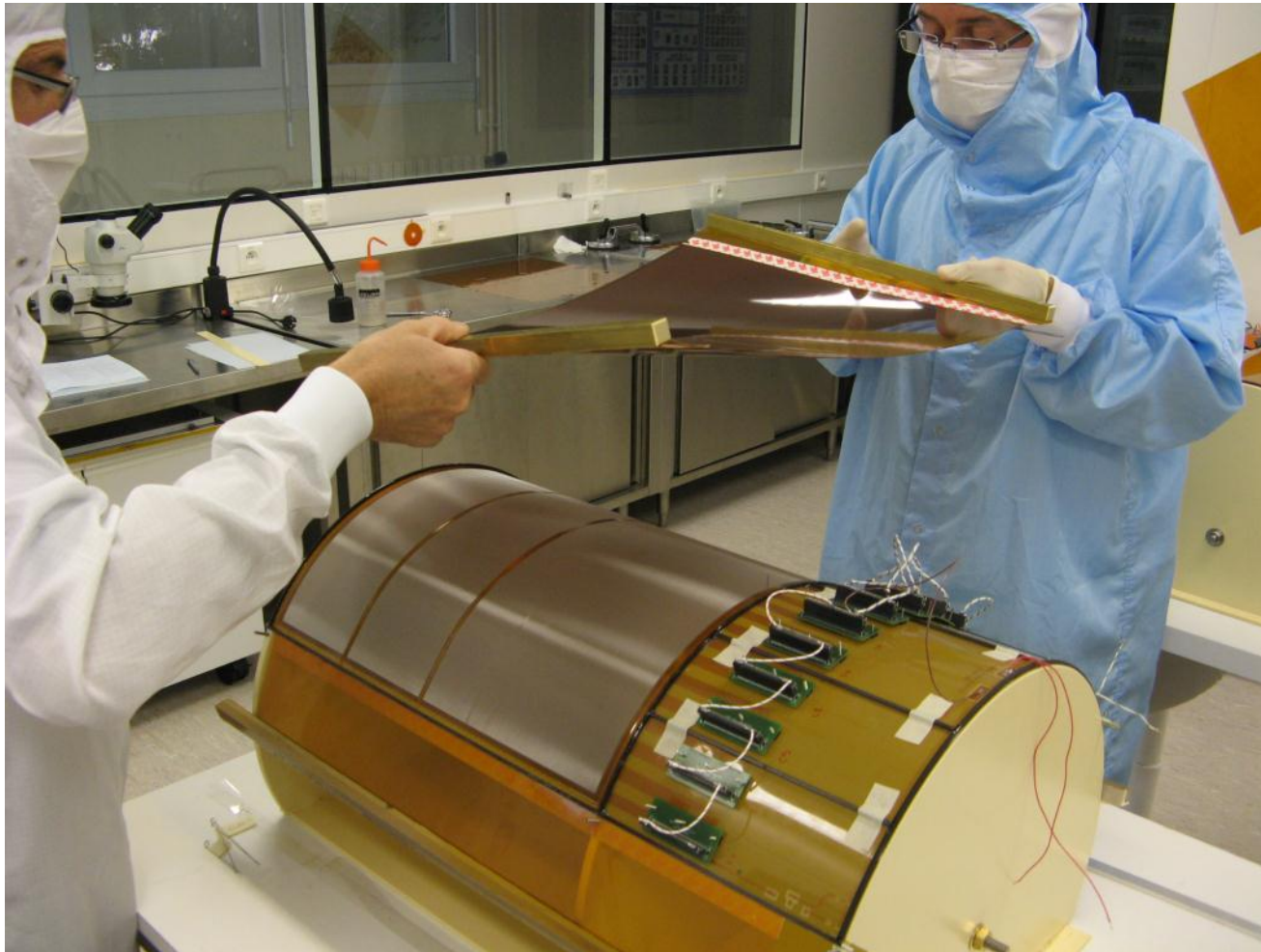


Three curved bulk under high voltage test.

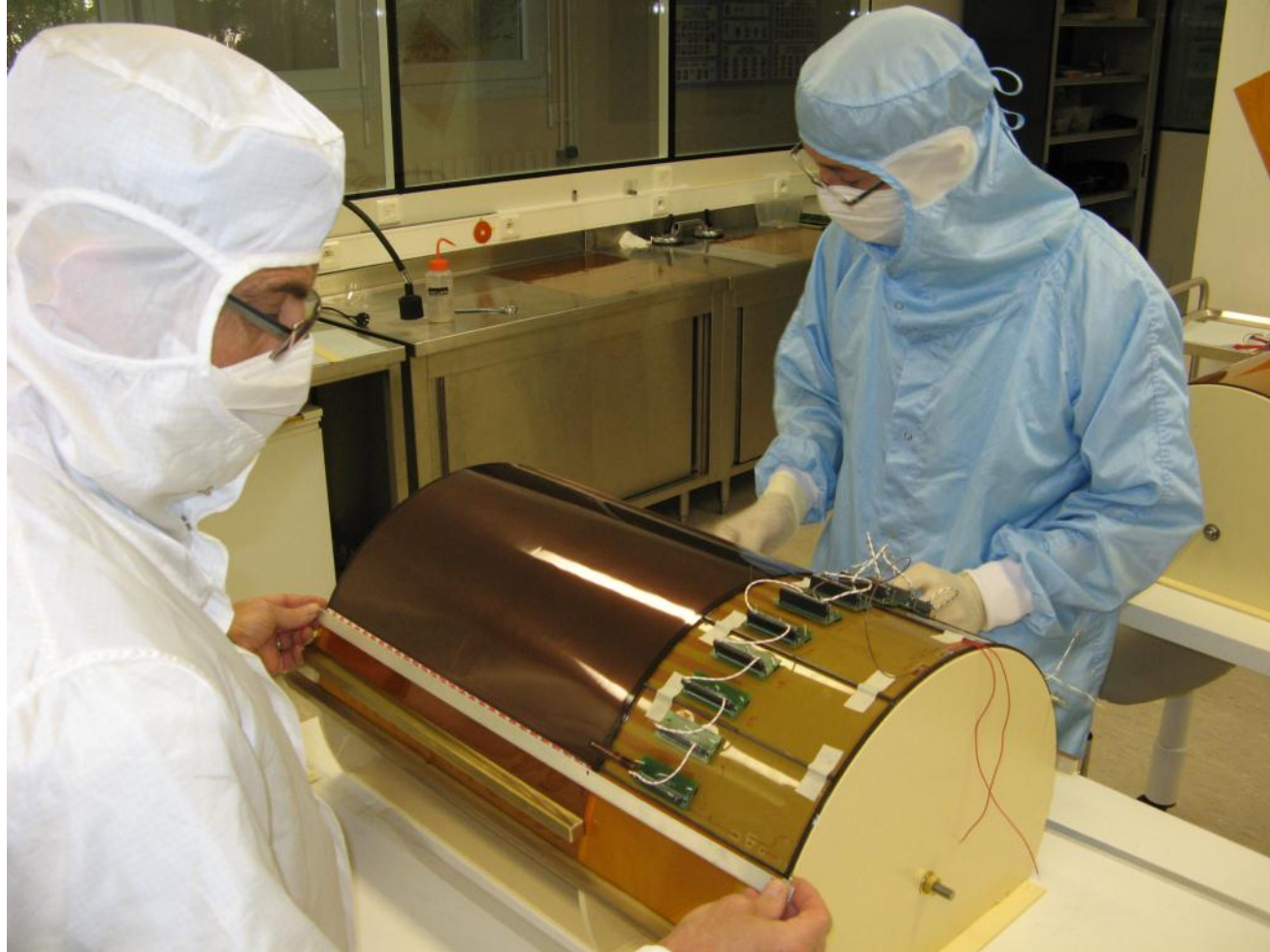
Barrel detector: carbon gluing



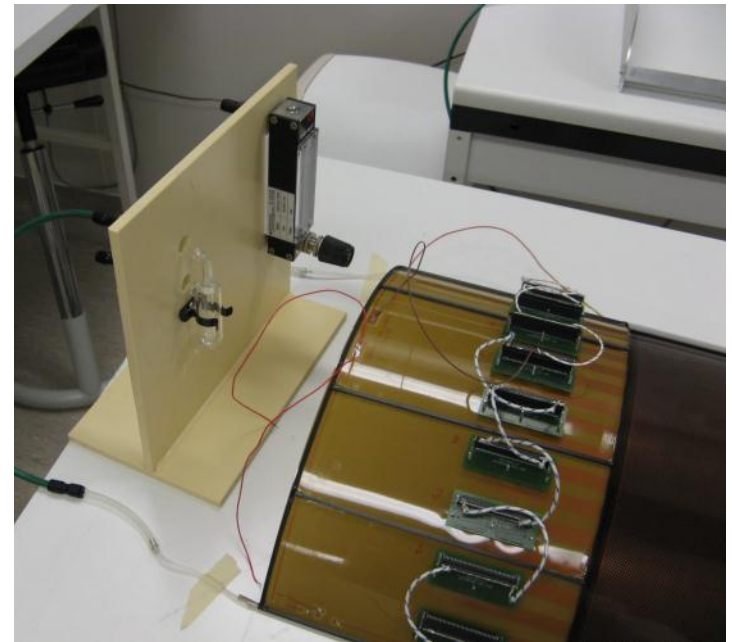
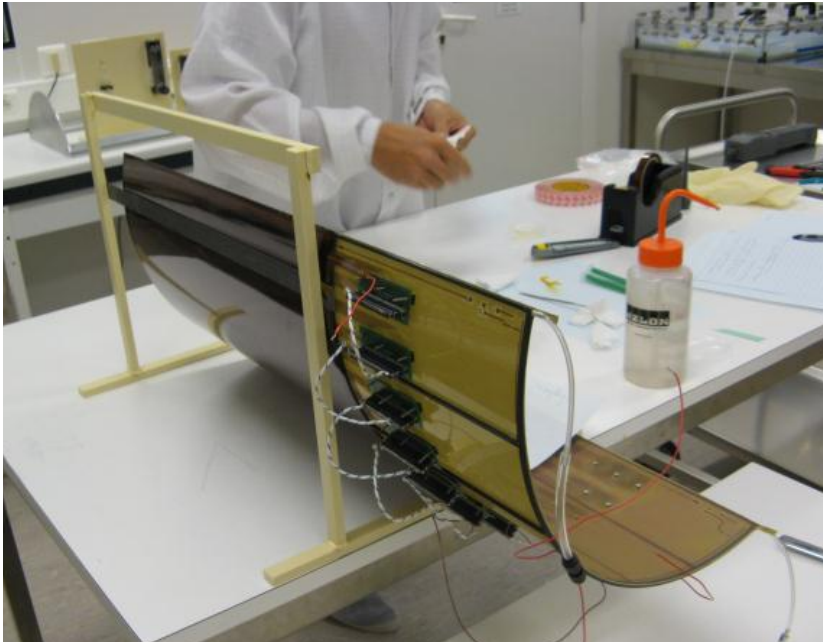
The carbon elements are glued, the segmented mesh (A, B, and C) are under HV test



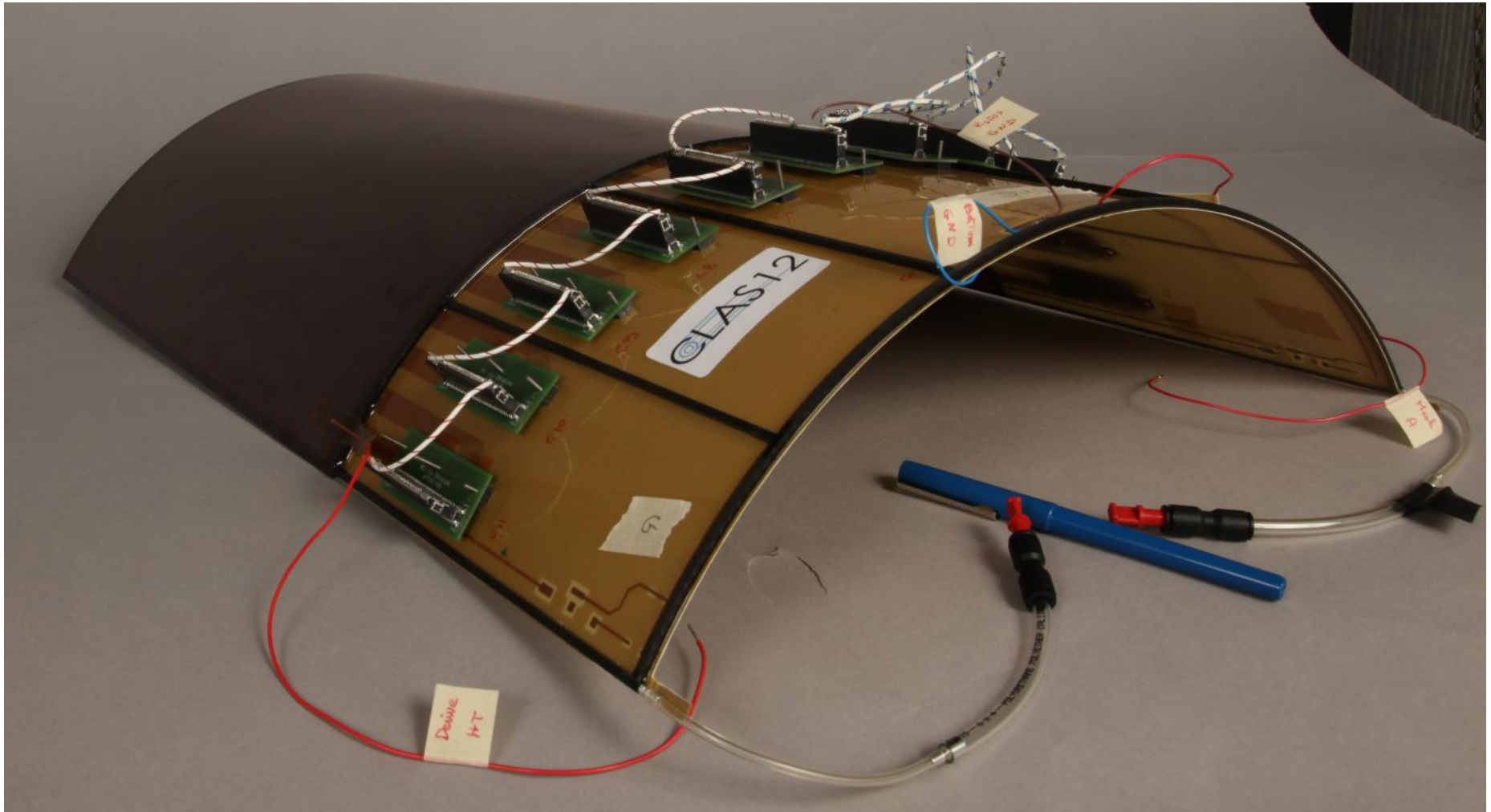
Kapton drift foil before gluing.



Kapton drift foil glued



The drift is sealed with 1 mm Araldite glue on its periphery.
No measurable leak under argon (leak $< 10^{-3}$ l/h)
Oil bubbler in entrance assure 4 mbar max pressure in tile



Final tile # DM2 is under cosmic test

Barrel alignment philosophy

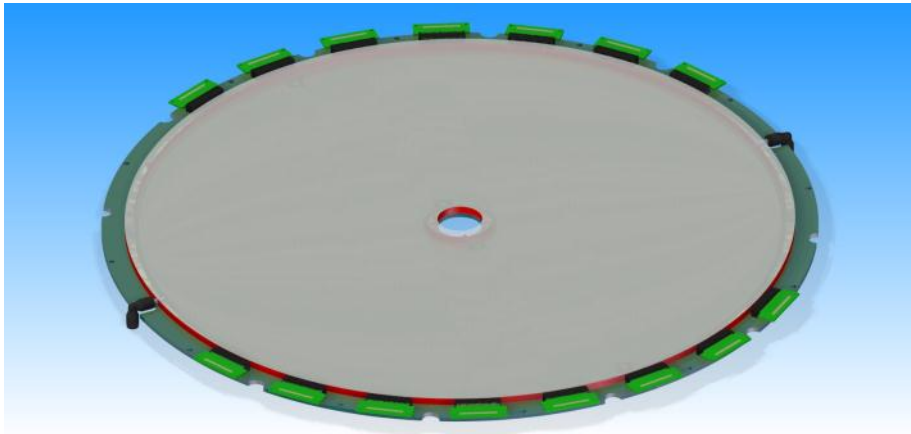
In order to know the position of each active area (strips) once in the magnet metrology will be done during integration

- Each detector will have several printed copper cross hair
 - Cross hair and made during the strip printing.
- Each detector will have a glued mechanical support for geometer marble
 - Distance between cross hair and marble support measured by optic means ($\pm 5 \mu\text{m}$) on each tile
- During barrel tile integration in its structure each tile position will be measured versus marble supports at the rear of the barrel structure
 - Optical measurement between tiles and barrel structure ($\pm 5 \mu\text{m}$)
- During barrel structure integration with the main support tube measurement will be done with marble support on the support tube.
 - Optical measurement between barrel structure and tube ($\pm 5 \mu\text{m}$)

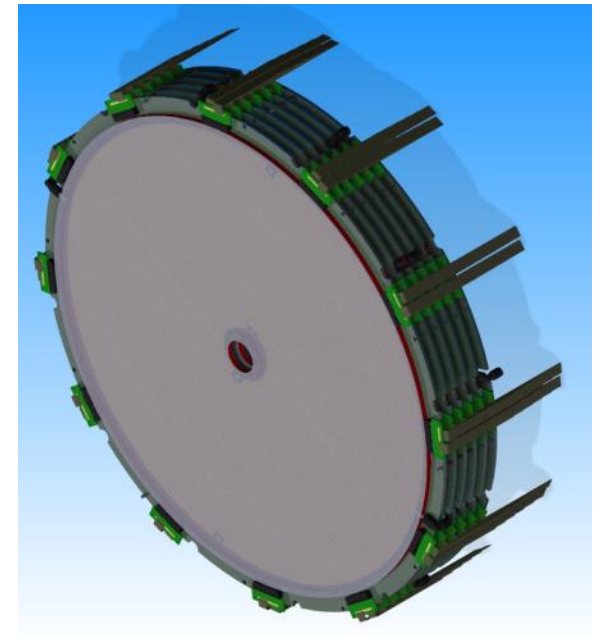
When the support tube will be inserted in the magnet the position measurement at the rear of the tube will give strip position (better than 0,1 mm)

Two prototype are under realization at CERN. They will be tested in fall 2012.

The forward detector will be resistive bulk. The mesh segmentation is still an open issue. For the prototype the drift will be removable (thicker and using mechanics). For final object drift will be glued.



Single forward disk



Stack of 6 forward