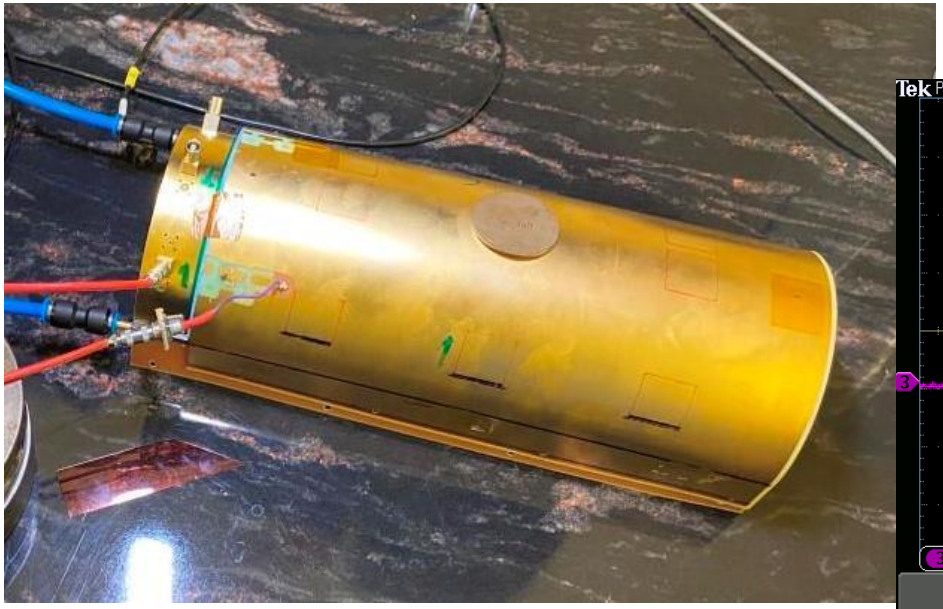
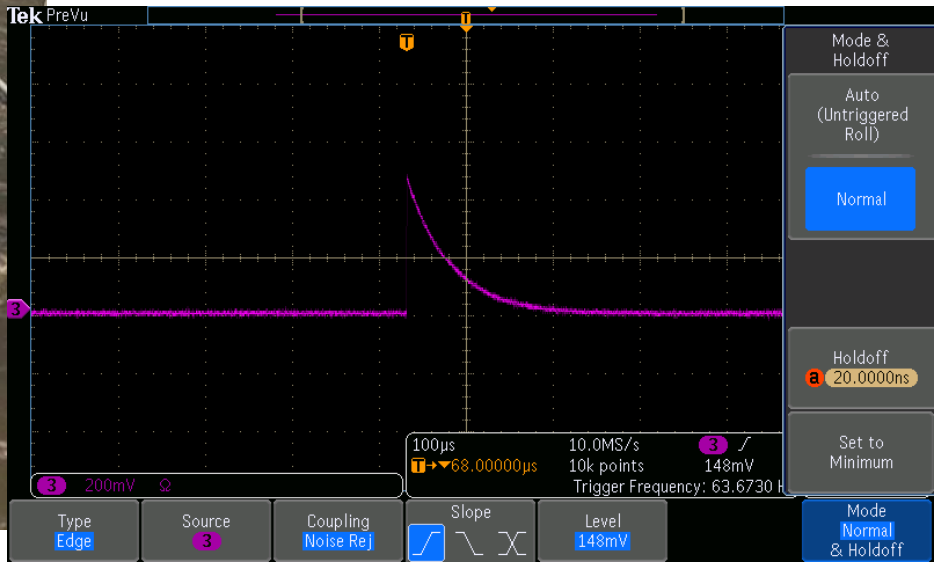
Status of MCT:

First cylindrical prototype

First cylindrical MM prototype is working!

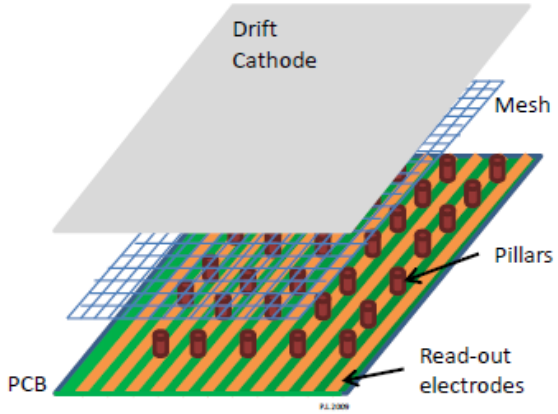


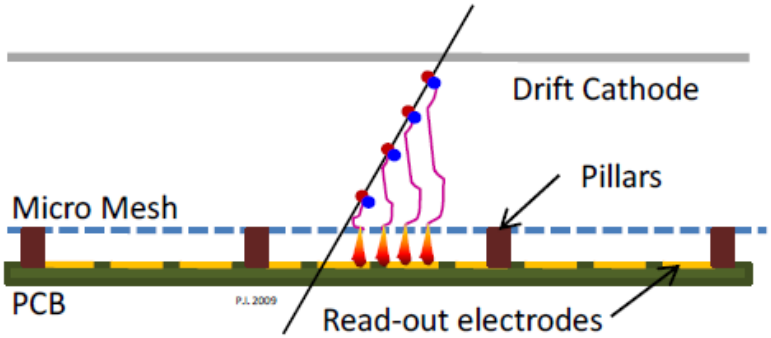


- The only bent MM chambers was produced by Saclay group for CLAS12 exp. , R=40cm

- MCT with R=5cm should be build for SPD

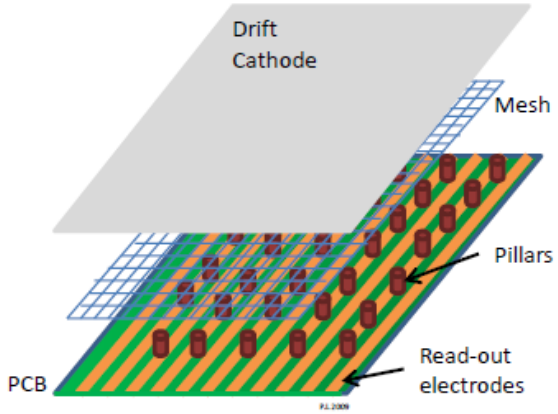
Micromegas detector

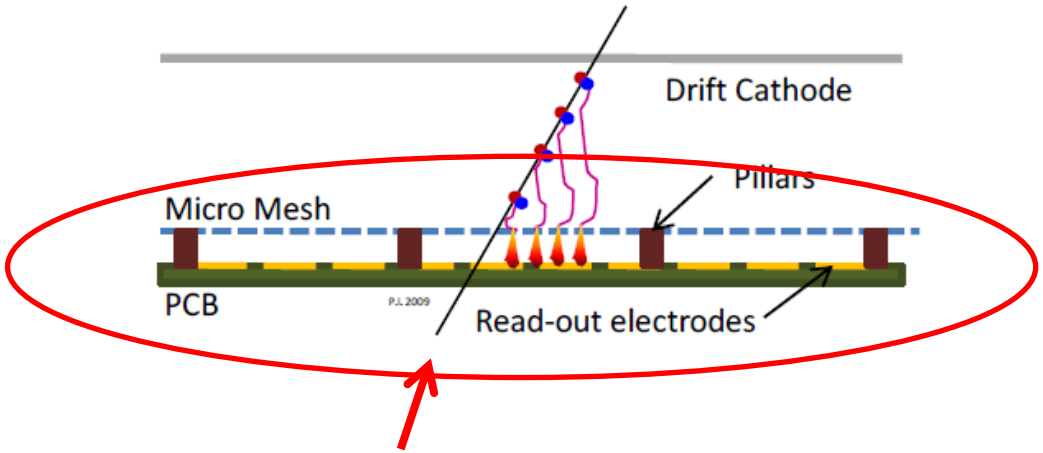




- Parallel plate proportional counter with dedicated ionization and amplification gaps separated by fine mesh
- Precise value of amplification gap is defined by isolating pillars
- Photolithography is used to produce RO board+ mesh sandwich

Micromegas detector





single non-disassembling module

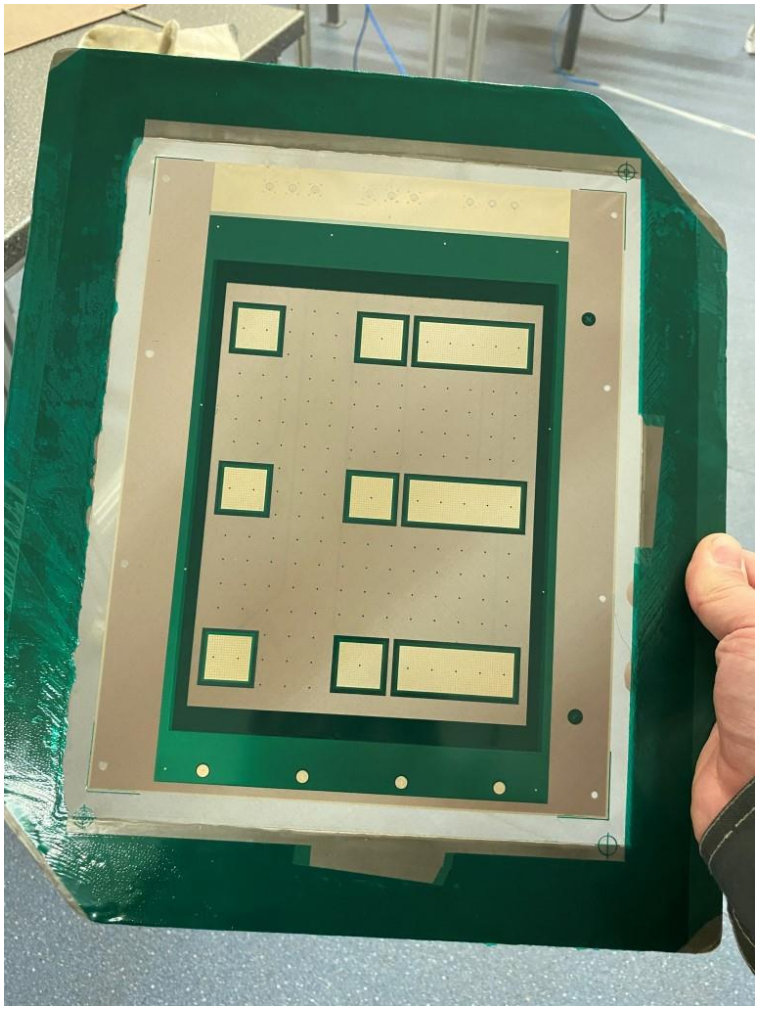
- Parallel plate proportional counter with dedicated ionization and amplification gaps separated by fine mesh
- Precise value of amplification gap is defined by isolating pillars
- Photolithography is used to produce RO board+ mesh sandwich

MM production-1

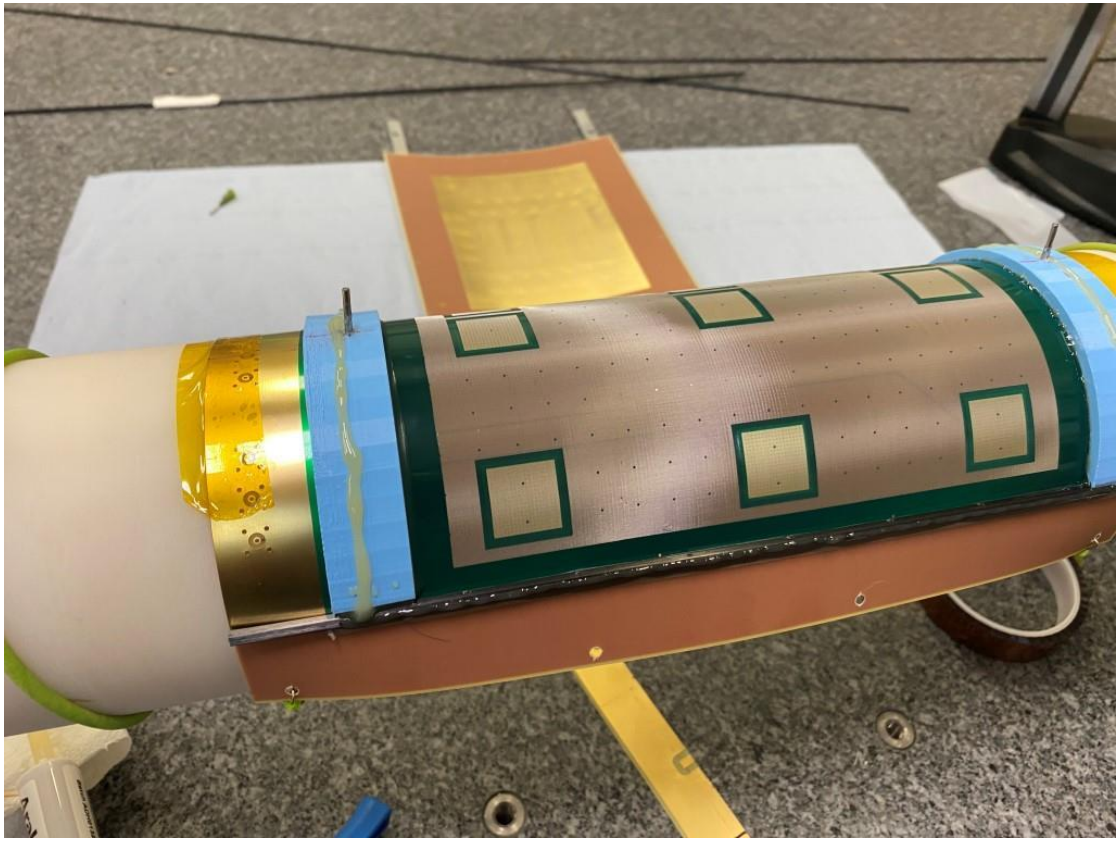
- Mesh pre-tension on temporary frame

MM production-2

- Photoresist applied on RO board, mesh fixed between photoresist layers
- exposition of photoresist to UV light through mask corresponding to desired pillar pattern etching of unexposed photoresist
- Main bulk MM module is ready for bending& assembling



MM production-3



- Bending & fixation on template
- Gluing force elements (longbeams, arcs)
- Gluing cathode plain & hermetization
- Finalization (cut-out technological detail, add gas connectors, etc

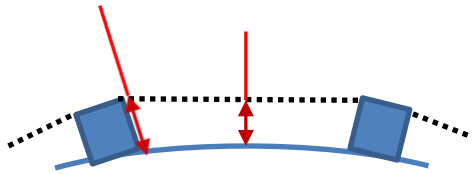
MM production-3

- Finalization (cut-out technological detail, add gas connectors, etc

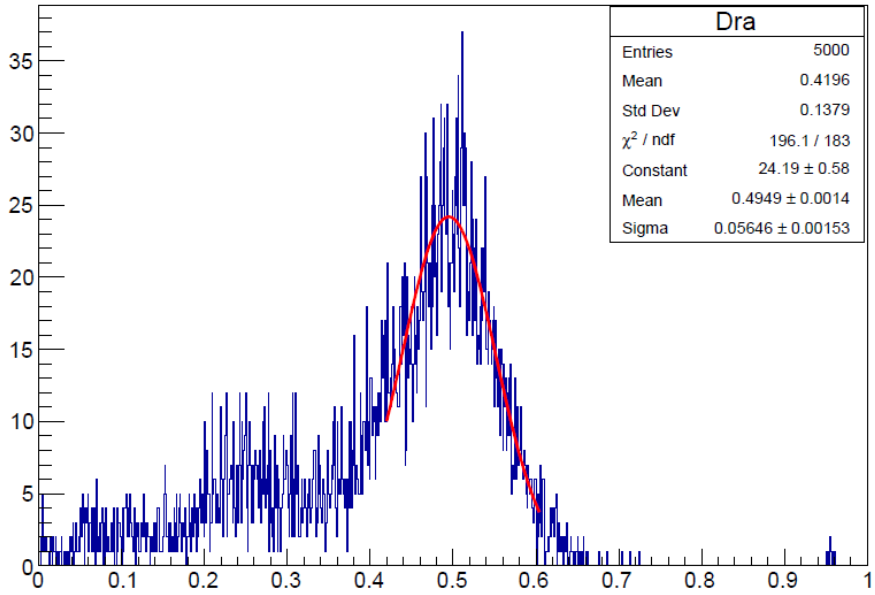
Why it's difficult to produce bent MM?

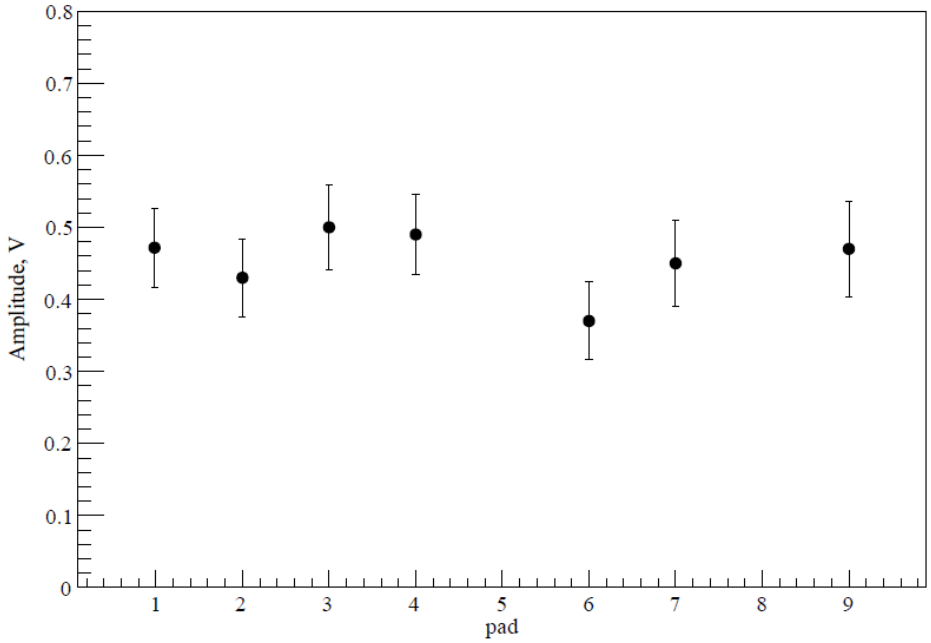
- Mesh tension increased due to bending: rough estimate gives $T \cong 50\ N/cm$, while typical value is $7 \div 10\ N/cm$
  - **Change mesh orientation(~2 factor) , optimize PCB structure (~1.5 factor)**

- The stretched mesh has a flat shape between the pillars, due to which the distance from the mesh to the cylindrical surface of the anode varies significantly
  - **Keep small pillar pitch**



Gain uniformity





Next

- DLC degradation under discharge – **ongoing**
- Resolution test – 4 new MM chamber with 450µ and 600µ pitch - **assembling ongoing**
- Pillar pattern tests
- New, more realistic prototype