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saclay

# Tests on resistive Micromegas

by CEA Saclay Clas and COMPASS groups (+ others)

## **R&D in progress for future detectors at Clas and Compass**

Compass: tracking with high hadron flux, including in beam area

Clas: high particle flux, important magnetic field (parallel and perpendicular)

## **Goals of October beam test studies**

discharge rate reduction at high hadron flux (resistive layer, GEM foil)

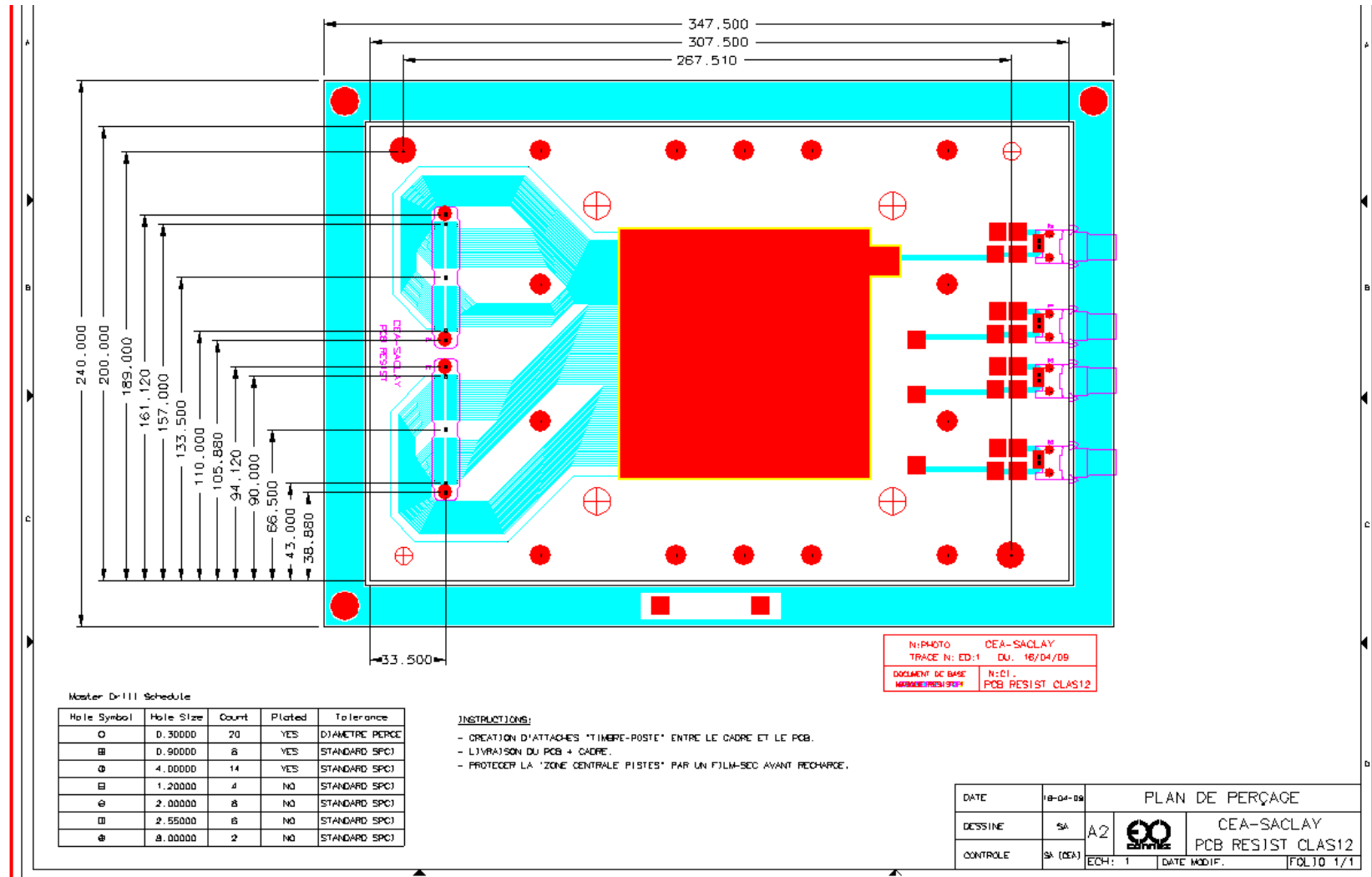
increase of cluster size for spatial resolution with larger strips (resistive layer)

performances and discharge rates with large lateral magnetic field (small ionization gap with large electric field)

# Scheme of detectors

## Standard 10x10cm detectors

two read-out area: 72 \* 400µm strips and 72 \* 1mm strips



# Overview of detectors to study

## Detectors taken as reference

- 2 standard bulk 5mm ionization + 128 $\mu$ m amplification
- 1 non bulk with copper mesh 5mm + 128 $\mu$ m

## Resistive detectors

- 1 bulk with resistive kapton foil (1M $\Omega$ m<sup>2</sup>) on 50 $\mu$ m prepreg layer
- 1 bulk with resistive paste (1M $\Omega$ m<sup>2</sup>) on prepreg layer
- 1 bulk with resistive paste (100M $\Omega$ m<sup>2</sup>) on prepreg layer
- 1 bulk with resistive paste on strips + coverlay walls

## Other detectors

- 1 standard bulk with 2mm ionization gap (effect of magnetic field)
- 1 standard bulk with inox drift electrode (also with mylar electrode)
- 1 bulk with additional GEM foil

# Strategy for the beam tests

## Characteristics to measure

discharge rate: monitoring of HV power supply, tagging of discharges on mesh  
gain & efficiency: AFTER read-out and T2K DAQ, external trigger  
spatial resolution: DAQ + telescope with other detectors

## Scans to be done

mesh HV (~5-10 points), drift HV (~5 points)  
GEM HV for GEM foil prototype (~5 points)  
magnetic field (4 points)

## Experimental set-up

table installed in Goliath magnet (active ~1/3 of the time)  
6 detectors mounted in the same time including 2 permanent std bulk MM  
external trigger from front CERN set-up + possible local scintillator  
mostly high flux hadron beam, some muon beam also interesting