R&D results from Tokyo

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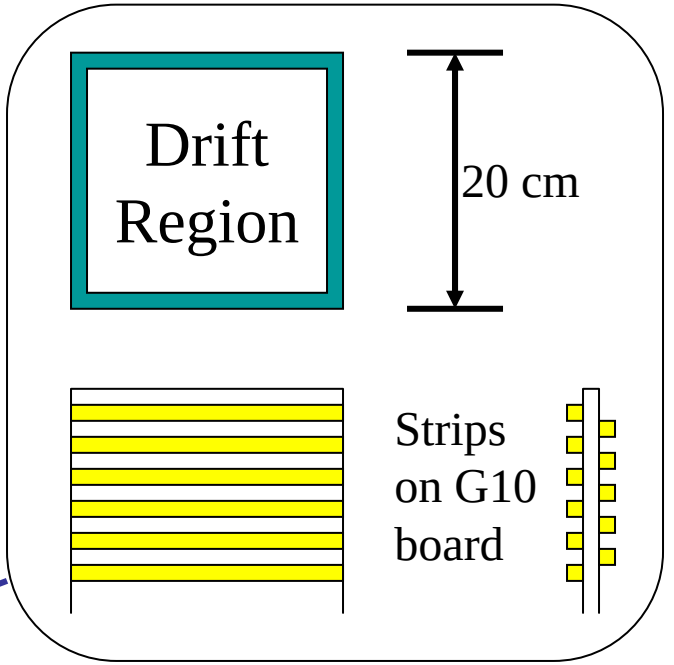
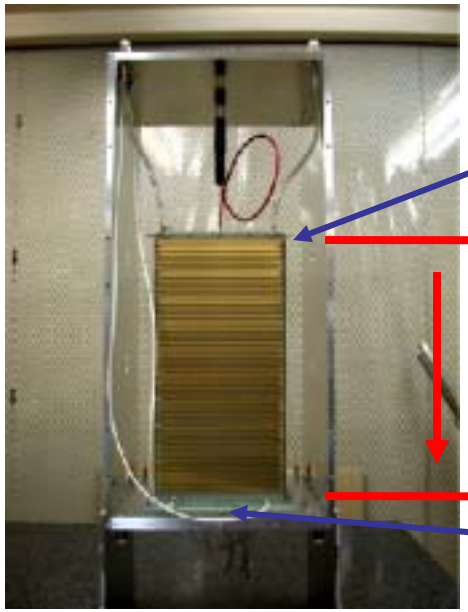
Contents

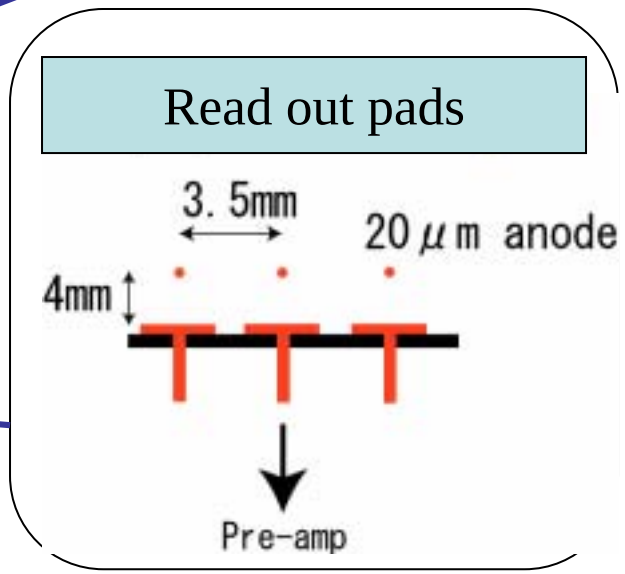
- Gas test result (T. Isobe)
- GEM in Japan (M. Inuzuka)

Gas Test Cell

- A gas test cell is made in Tokyo.
  - 30cm Drift Length, -30 kV HV
  - Readout from cathode Pads
    - 13mm, 9.5mm, 6mm, 2.5mm Pad
    - 20 μm anode wire
  - Three small holes for N2 LASER





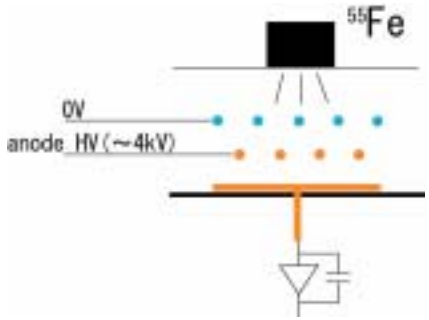


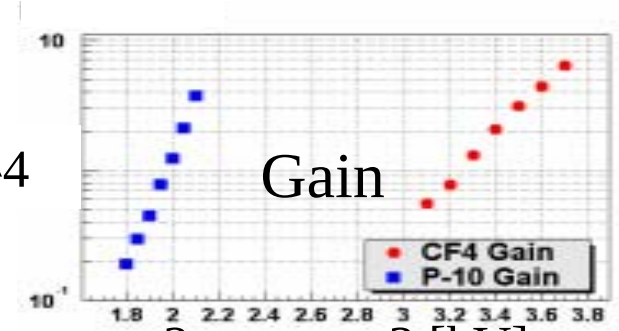
Charge sensitive preamp

FADC (Repic RPV-160)
100MHz s
8bit dynamic range
VME based DAQ

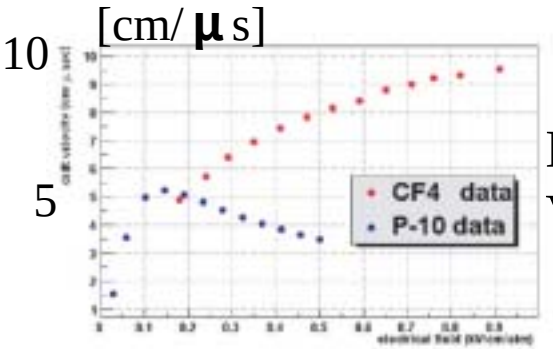
Results for CF4 and P10

- Gain
  - 5.9 keV X-ray from ^{55}Fe

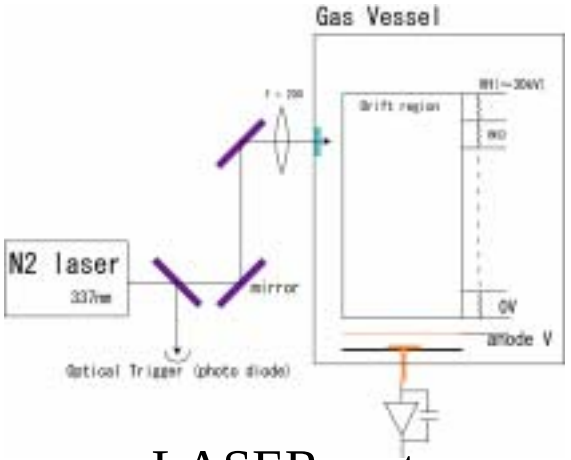




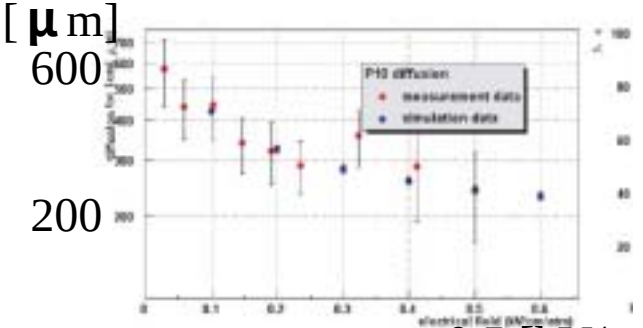
- Drift Velocity and Diffusion
  - N2 LASER
  - Input to 3 different position



Gas condition
20℃,1 atm
H2O 100ppm
O2 30ppm



LASER system

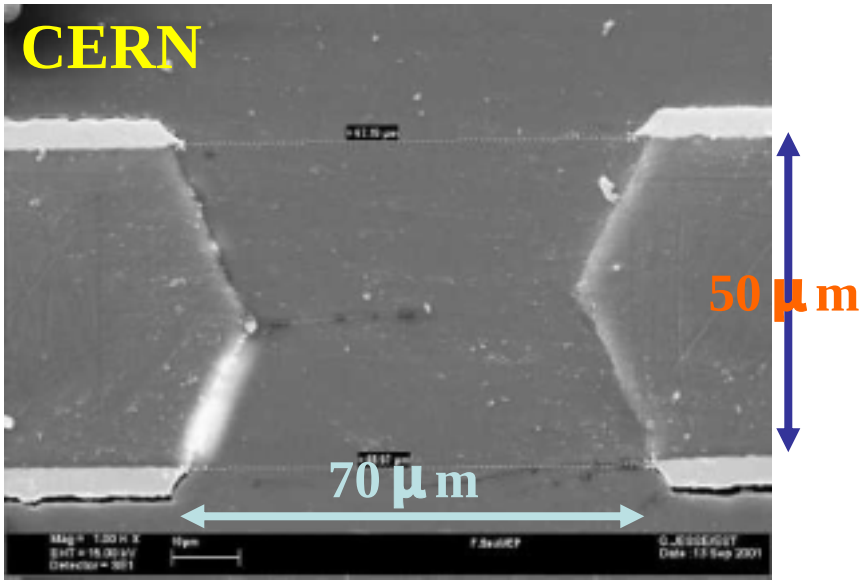


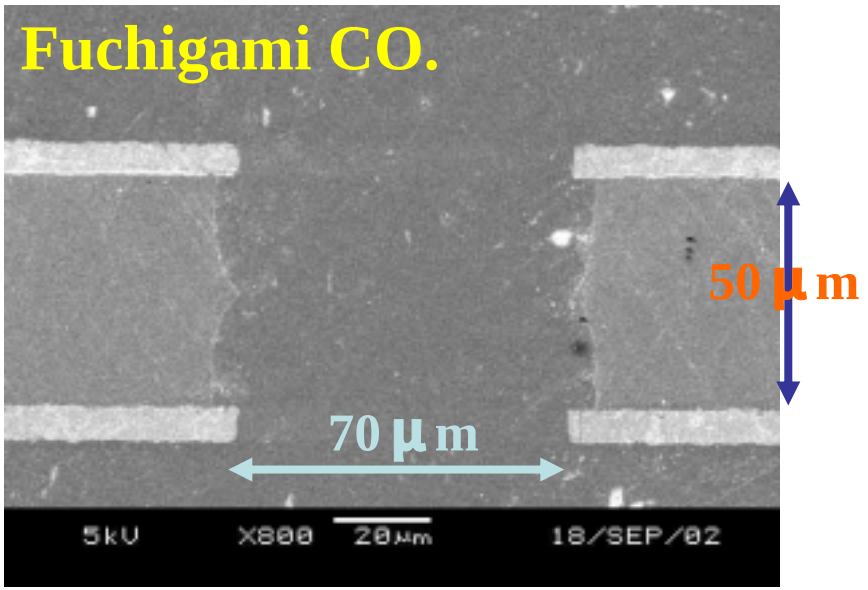
Diffusion (P10 only Red)
Blue Simulation

GEM in Japan

- Two kinds of GEM are tested in Tokyo
  - GEM from CERN
    - Sauli group
    - Wet etching
    - 100 G Ω between both side
  - GEM was made in Japan
    - Fuchigami Co.
    - Plasma etching
    - 10 GΩ between both side

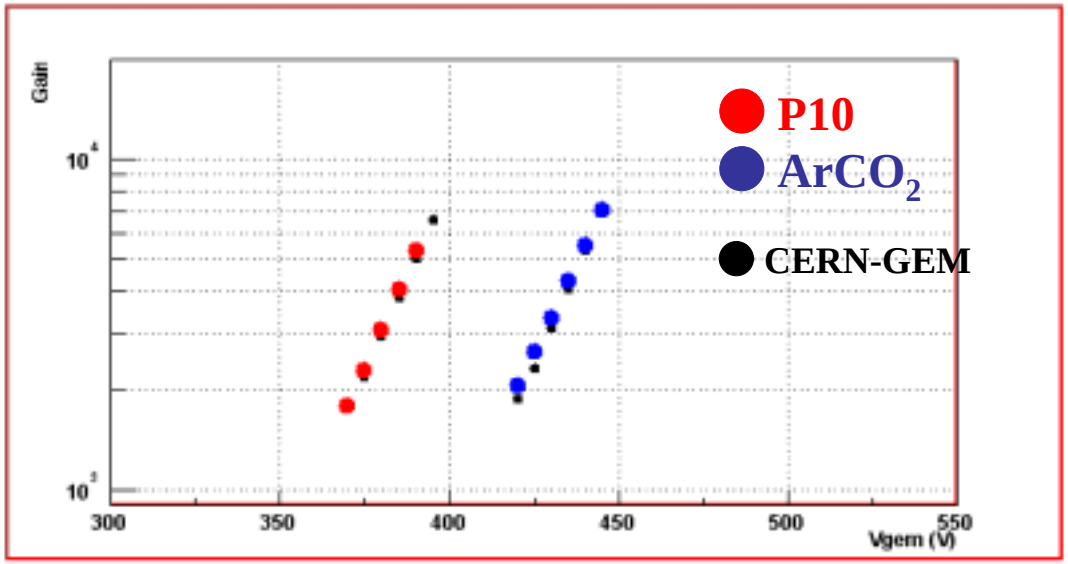
Concerns: resistor between both side
At the first, it was only 100 M Ω
Applied 400V for a while,
It became 10 GΩ
Finally, we can apply 520V in N2



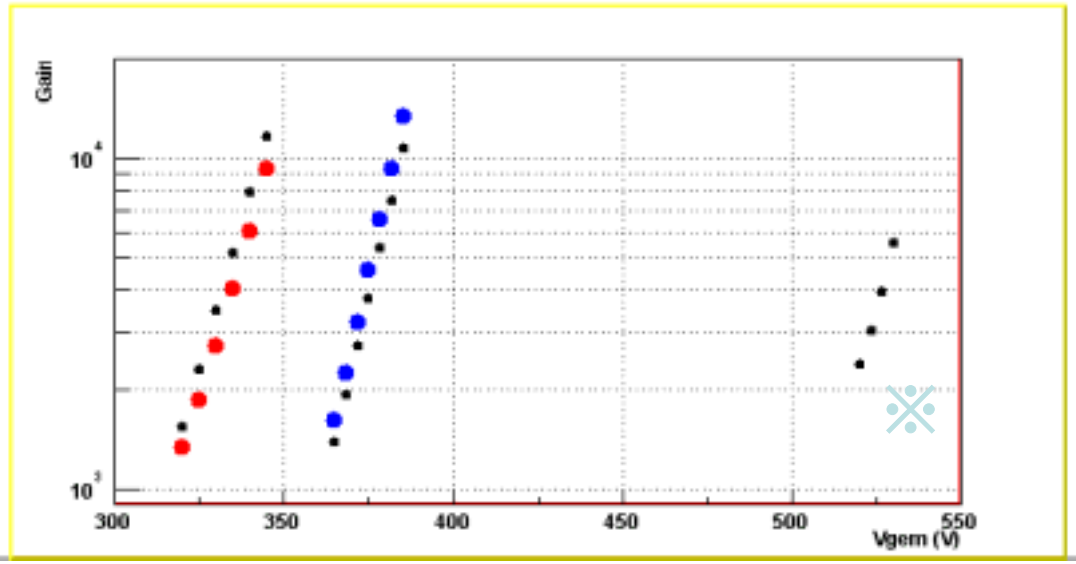


Gain of GEM

- 2 layers of Japanese GEM



- 2 Japanese GEM + 1 CERN-GEM, Total 3 layers.



The results are consistent with the results of CERN GEM

Persons in Tokyo

- One graduate student (Tada-aki Isobe) is interested in this project. He already started some basic gas study and he will join the PHENIX R&D project soon.
- One post-doc (Masahide Inuzuka) is interested in GEM and HBD. He visited Weitzman Institute and he will continue his study in Japan.