2D Tracking by μ-PIC+GEM+SF_6

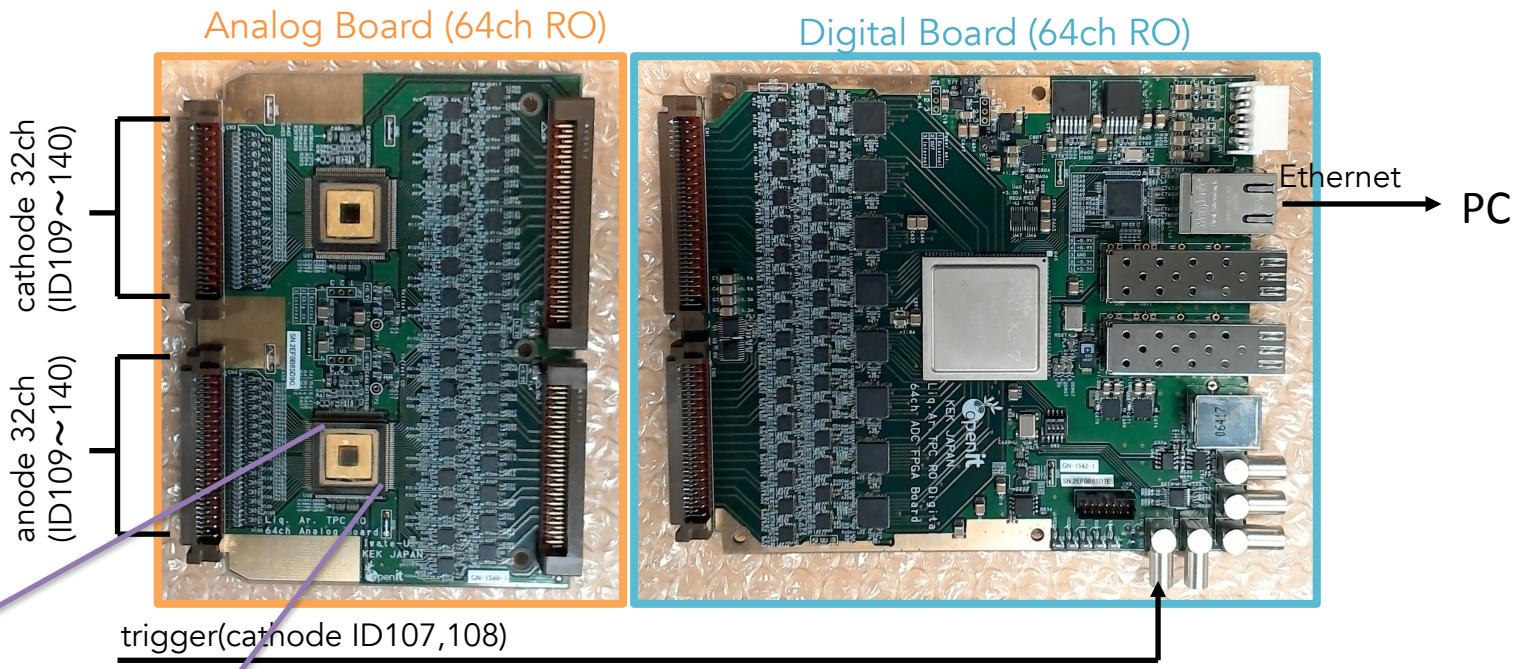
Tomonori Ikeda

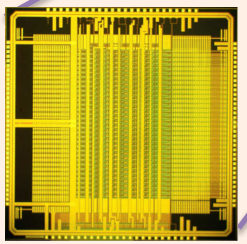
Kobe University

- We are developing μ-PIC+GEM+SF_6 system.
- It's max gas gain is about 2000 and energy resolution is 70%@5.9keV.
- As next step, we start detecting 2D tracking.

Erectronics

- Using analog and digital board made by KEK for Liquid Argon detector

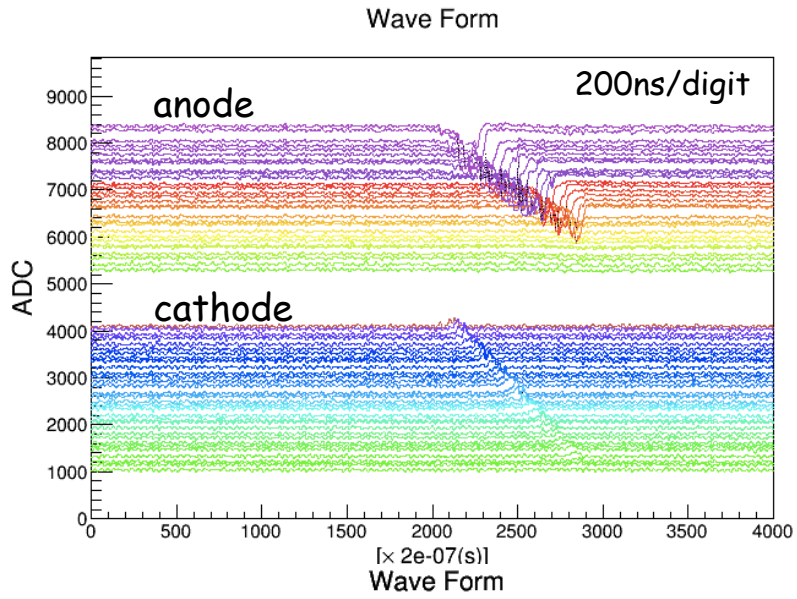


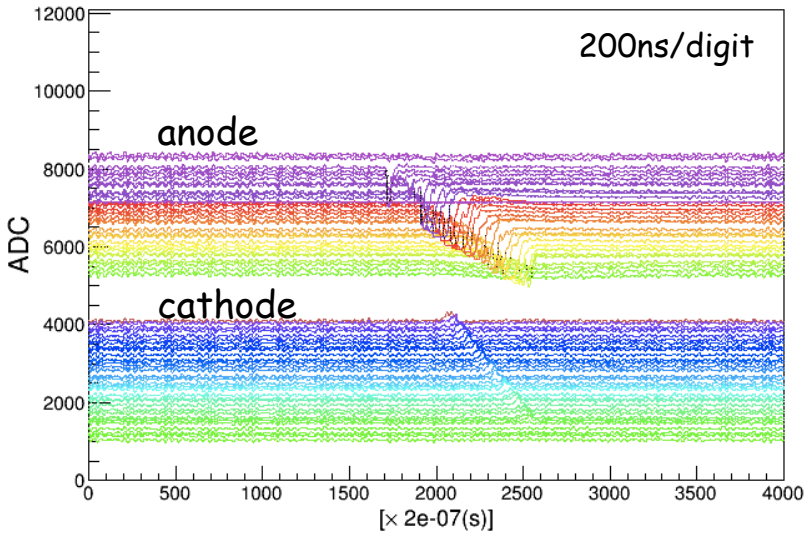

LTARS2014

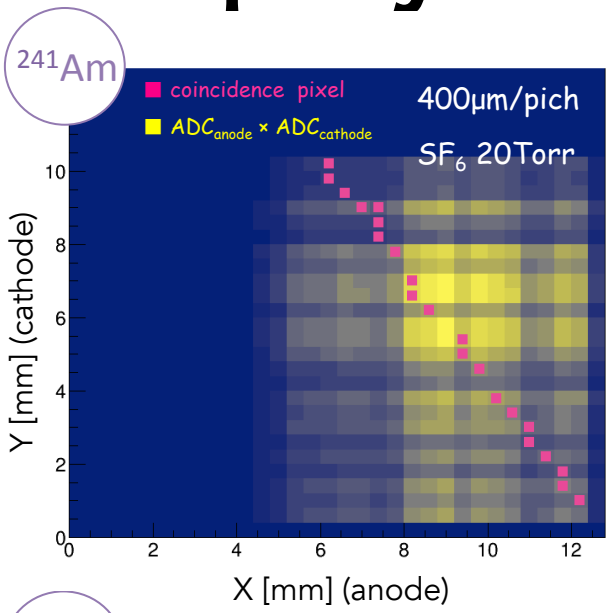
Conversion gain : ～9.0mV/fC
Max input charge : 60~100fC
ENC : below 2000@300pF
Shaping time : 1us

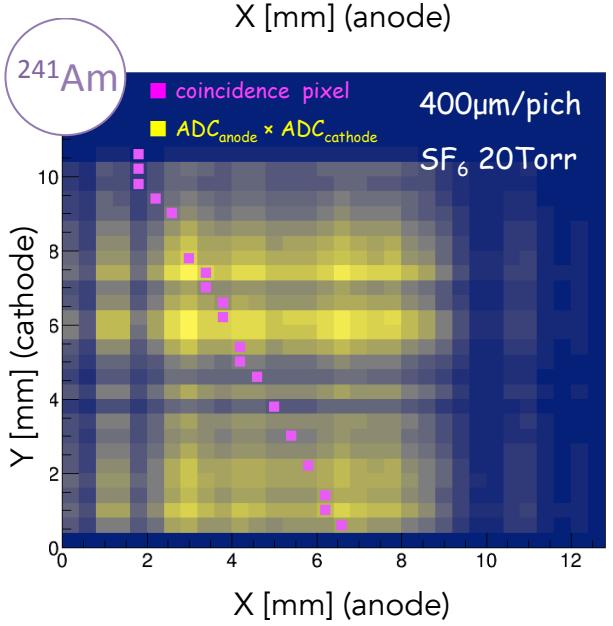
32ch differential inputs(2Vpp)
12bits FADC
4000 sampling
Sampling frequency <20MHz

Alpha Event Display



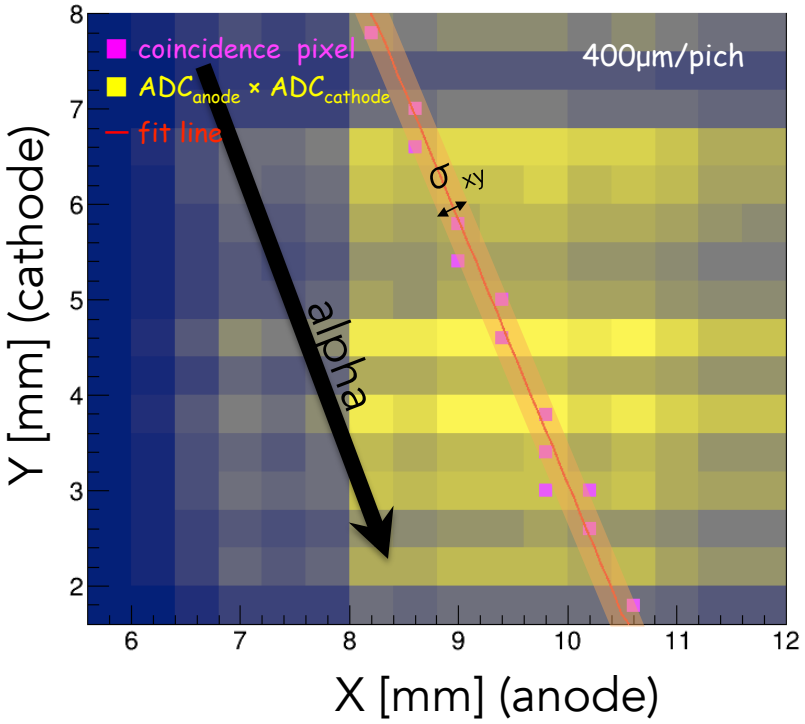


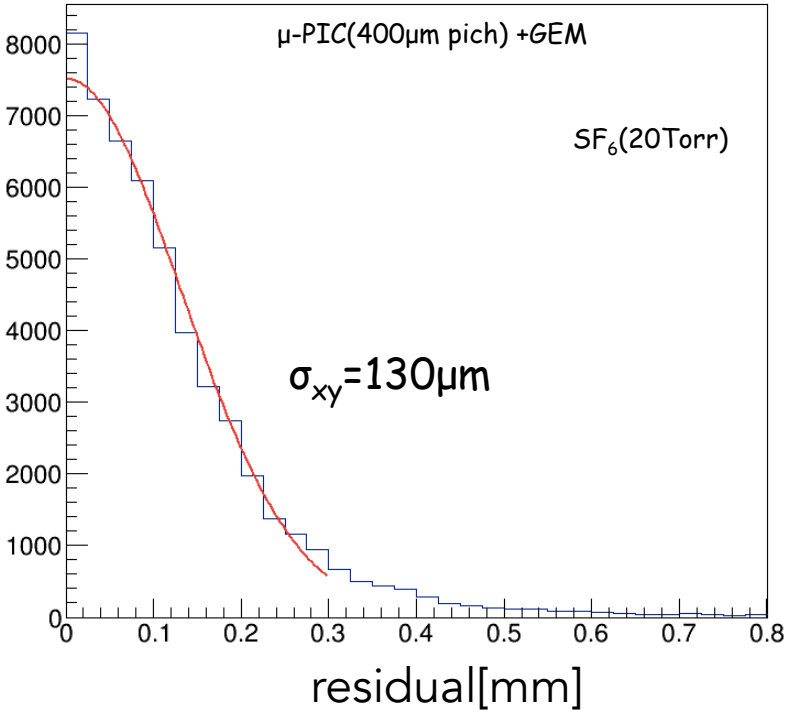




2D position resolution

- Evaluating by residual method.





2D positioin resolution σ_{XY}(RMS) = 130 μm

MICROMEGAS and Multi GEM

- μ-PIC(+GEM)
  - Anode diameter : 50um
  - Cathode hole diameter : 250um
  - made by DNP in Japan

- Multi GEM
  - Width : 100um
  - Material: liquid crystal polymer
  - Made by Scienergy in Japan

From now,

- μ-PIC+GEM system , we don't know only GEM gain.
- How gain can we get ?

- MICROMEGAS
  - Pillar length : 125um
  - Strip pich : 400um
  - made by Raytech in Japan

From now,

- Can we use Micro Megas in SF_6 gas?