

GPPU Progress report

Research progress for measurement of Xi atom X-rays

2019.05.08 Kanauchi

Progress

- Preparation for J-PARC E03 experiment
 - Ge detectors maintenance & study
 - Simulation for spectrometer setup
- Join in J-PARC E40 experiment
 - Learning of spectrometer
 - Analyze physics data

J-PARC E03

Measurement of the energy shift and width of Fe- Ξ^- ($6 \rightarrow 5$) transition

1st phase

Measurement

- Fe- Ξ^- X-ray ($7 \rightarrow 6$)

Physics

- ($6 \rightarrow 5$) shift and width (if width < 1 keV)
- Absorption strength from ($6 \rightarrow 5$) / ($7 \rightarrow 6$)

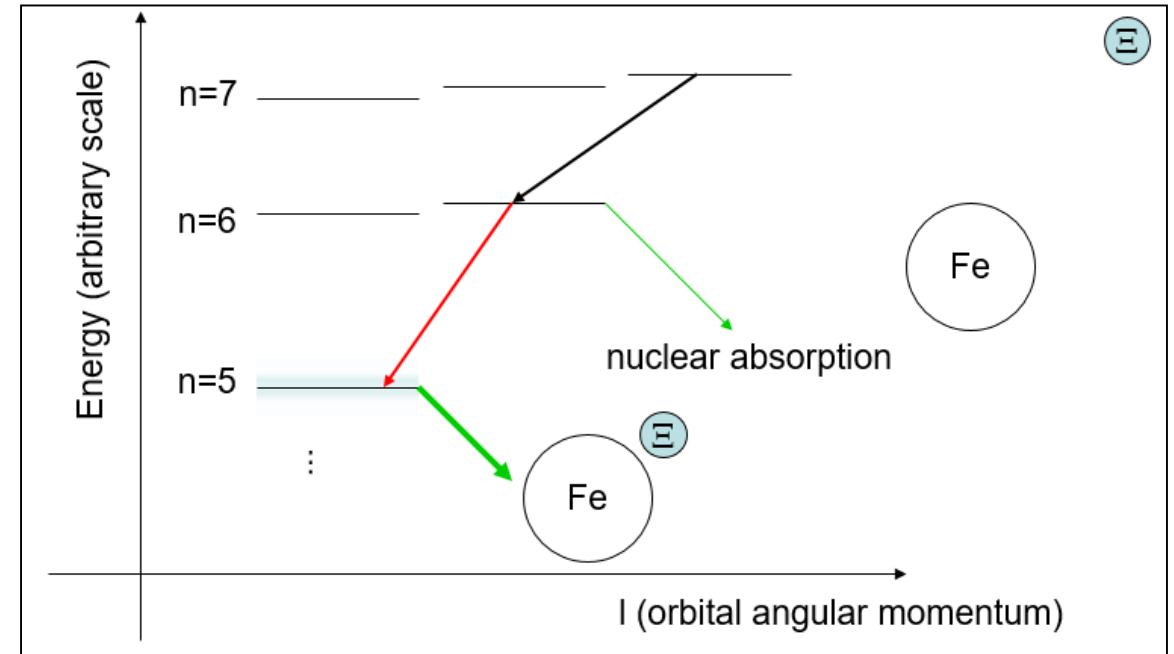
2nd phase (change to optimize target)

Measurement

- Fe- Ξ^- X-ray ($6 \rightarrow 5$)

Physics

- ($6 \rightarrow 5$) shift and width



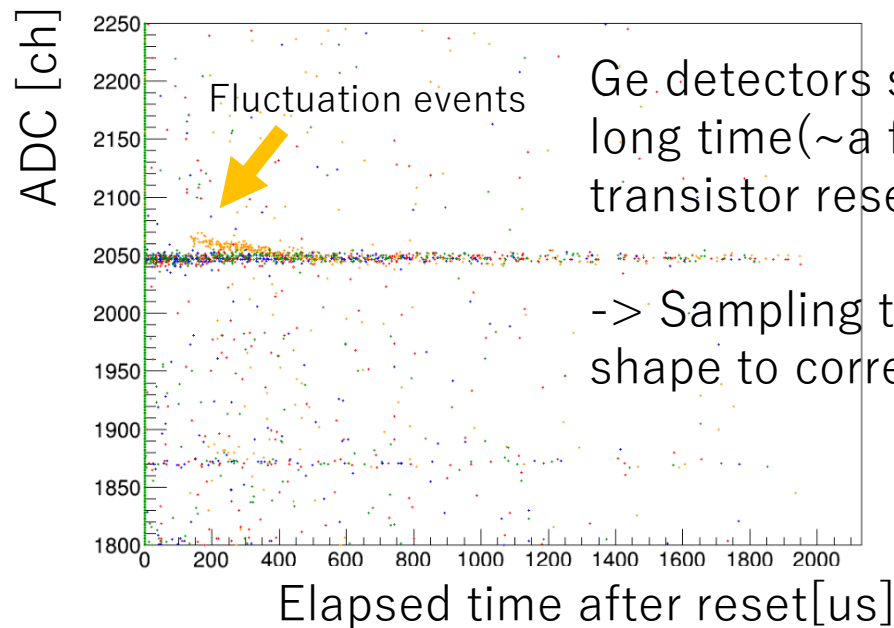
**Shift of X-ray ($6 \rightarrow 5$)
-> effect of strong interaction**

Preparation of J-PARC E03

Ge detectors maintenance

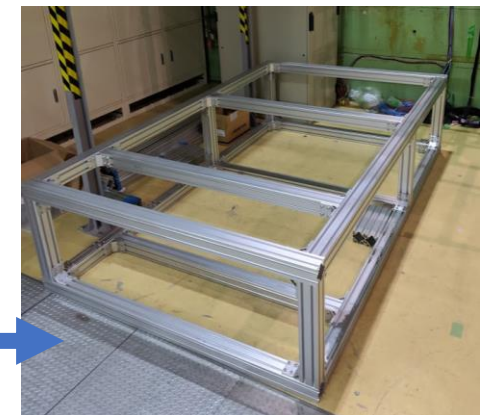
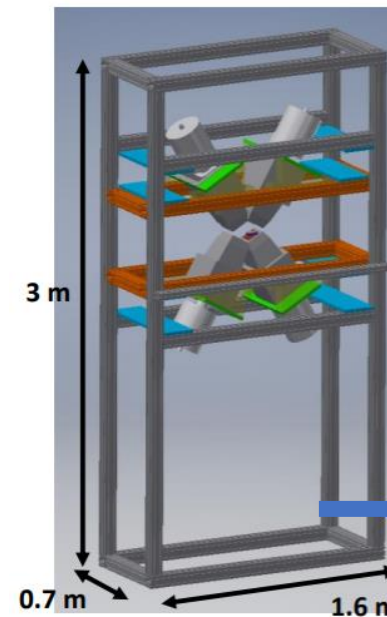
- Adjustment of preamp.
- Study of baseline fluctuation

Tuning parameter of potentiometer in preamp.
-> Signal deadtime was recovered.
9 ms -> 300 μ s
(Requirement: <1ms)



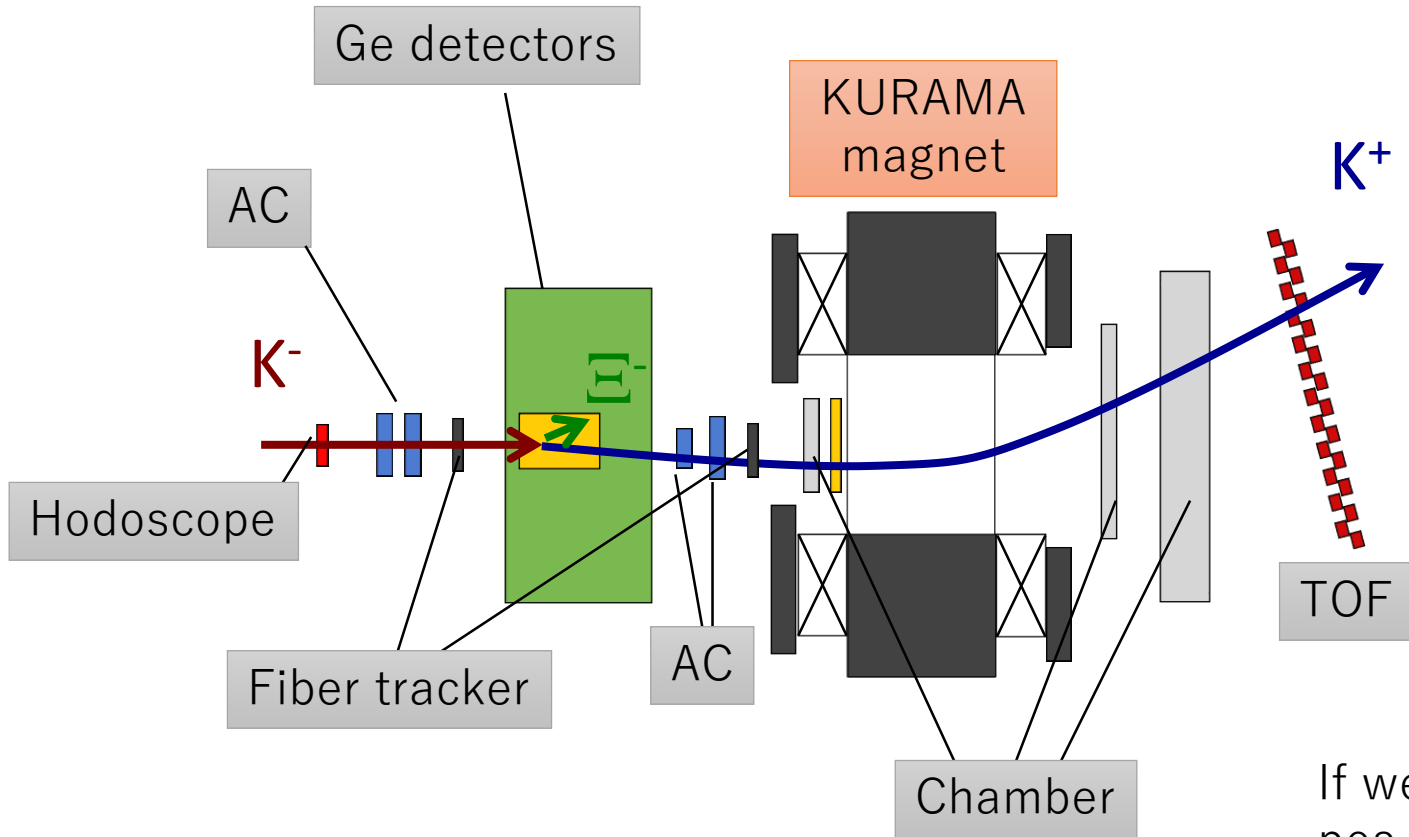
Ge detectors signal fluctuate long time (~a few sec.) after transistor reset.

-> Sampling the fluctuation shape to correct baseline.



Assembling the frame of Ge detectors.

Simulation for spectrometer setup

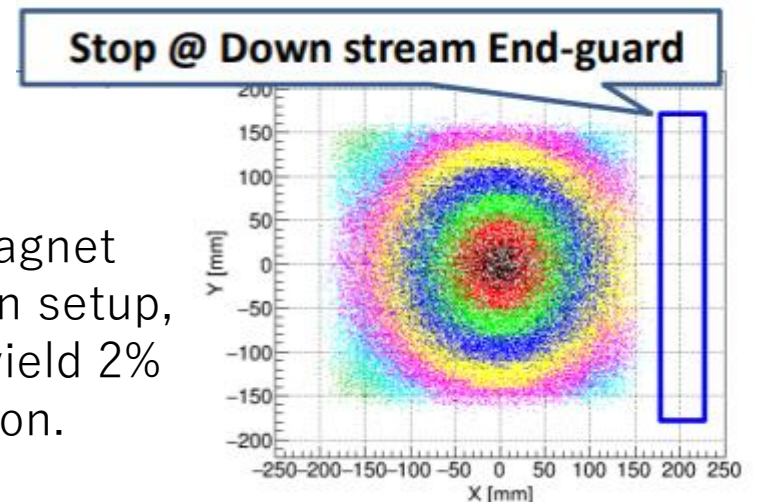


Plan to use common setup with after experiment.

-> Simulate acceptance Xi events yield.

- KURAMA pos.
- TOF installation angle
- Chamber tracking eff. ...etc.

If we change magnet pos. for common setup, we will loss Xi yield 2% than best position.



Join in J-PARC E40

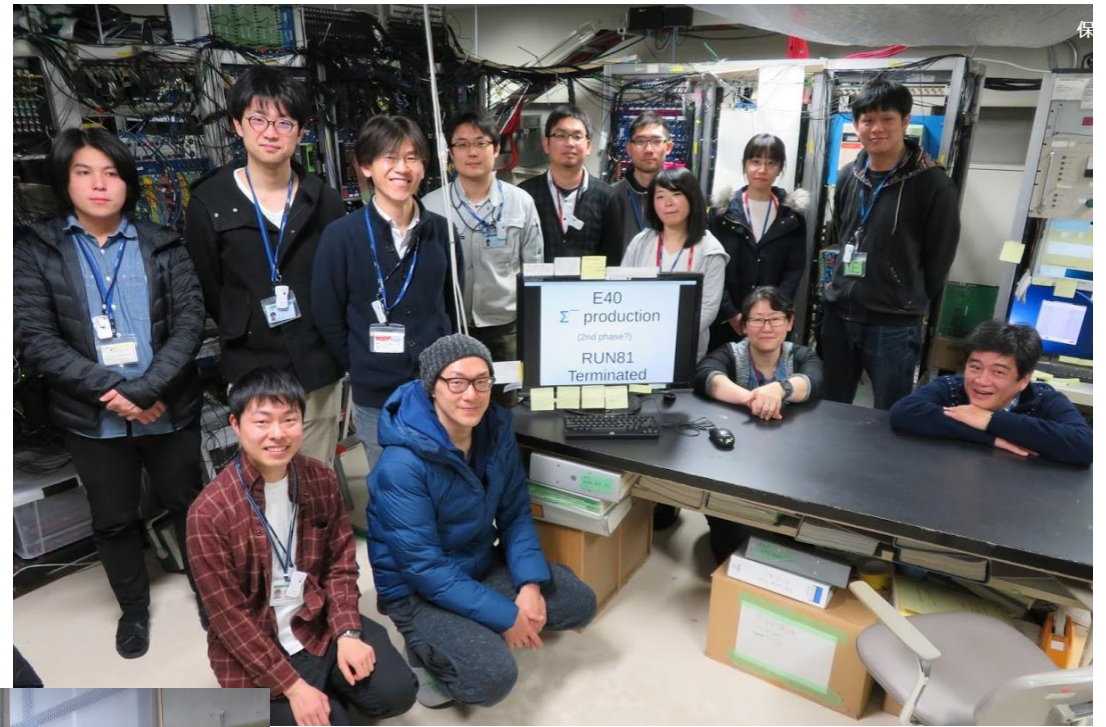
in Feb. – April.

E40 experiment

Σ p scattering experiment
@K1.8 beamline

->Some detectors setup is
same as J-PARC E03.

- Data analysis of KURAMA spectrometer
- Beam tuning



Future plan

Doctor thesis data taking: J-PARC E03

→After next spring (decided to delay due to the acc. trouble)

Oversea training: GSI

→After August in 2019?

I will contact and decide detail soon.

GSP&GASP: Remaining 9 point

GEP: Finished