

Tohoku-Mainz Meeting

Tohoku University

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2020/11/12

Goal of lifetime experiment

Resolve the Hypertriton Puzzle

Mass Mainz

Present

Method: Emulsion, (Star)
Calibration: Standard Emulsion
Accuracy: a few 10 keV (stat)

This research

Decay pion spectroscopy
Elastic Scattering
a few 10 keV (stat + syst)

Lifetime Tohoku

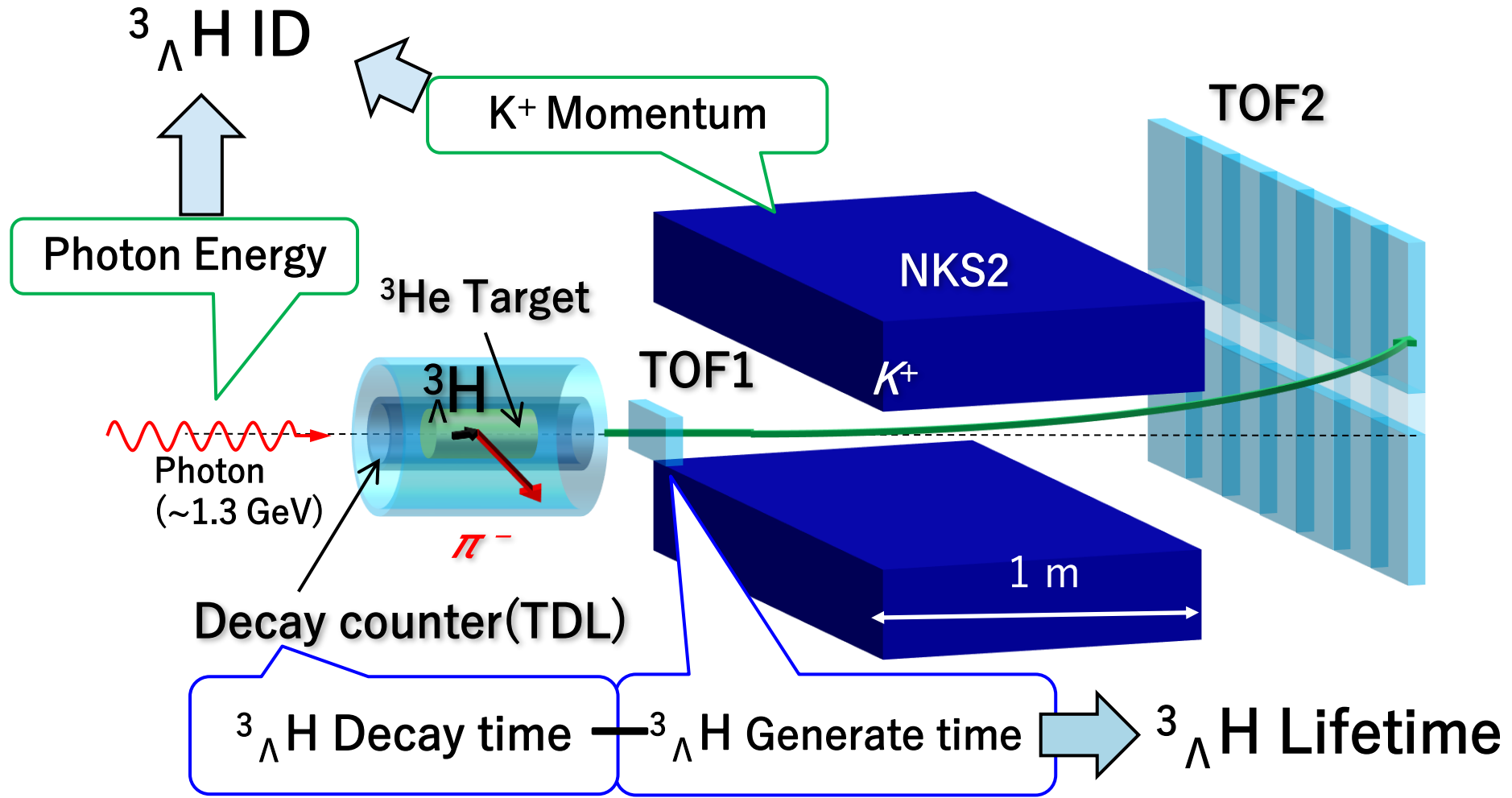
Present

Method: $\beta\gamma c\tau$ with Heavy ion beams
PID: Invariant mass
Accuracy: 10~50 ps

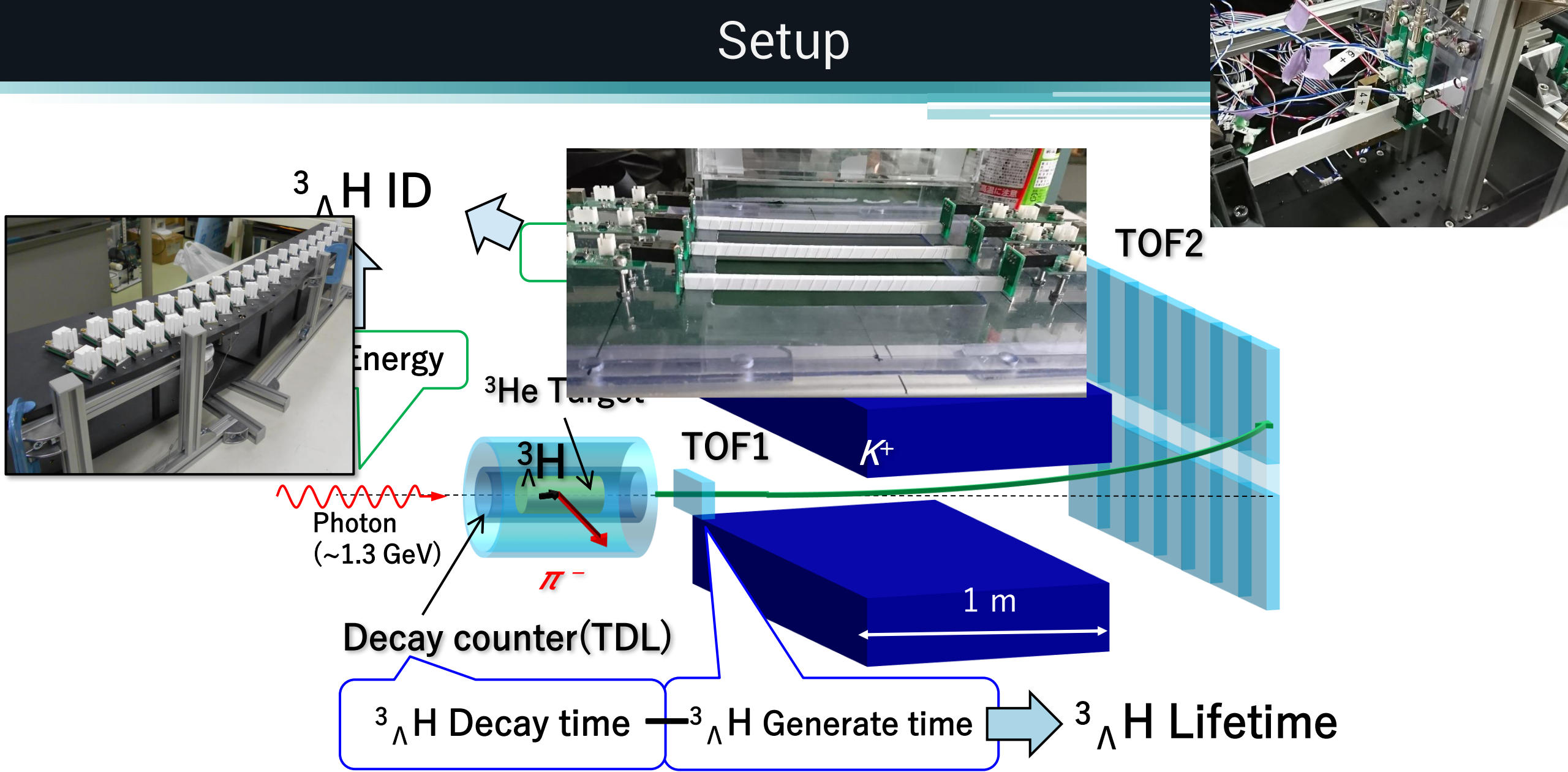
This research

τ with (γ, K^+) reaction
Missing mass
~20 ps

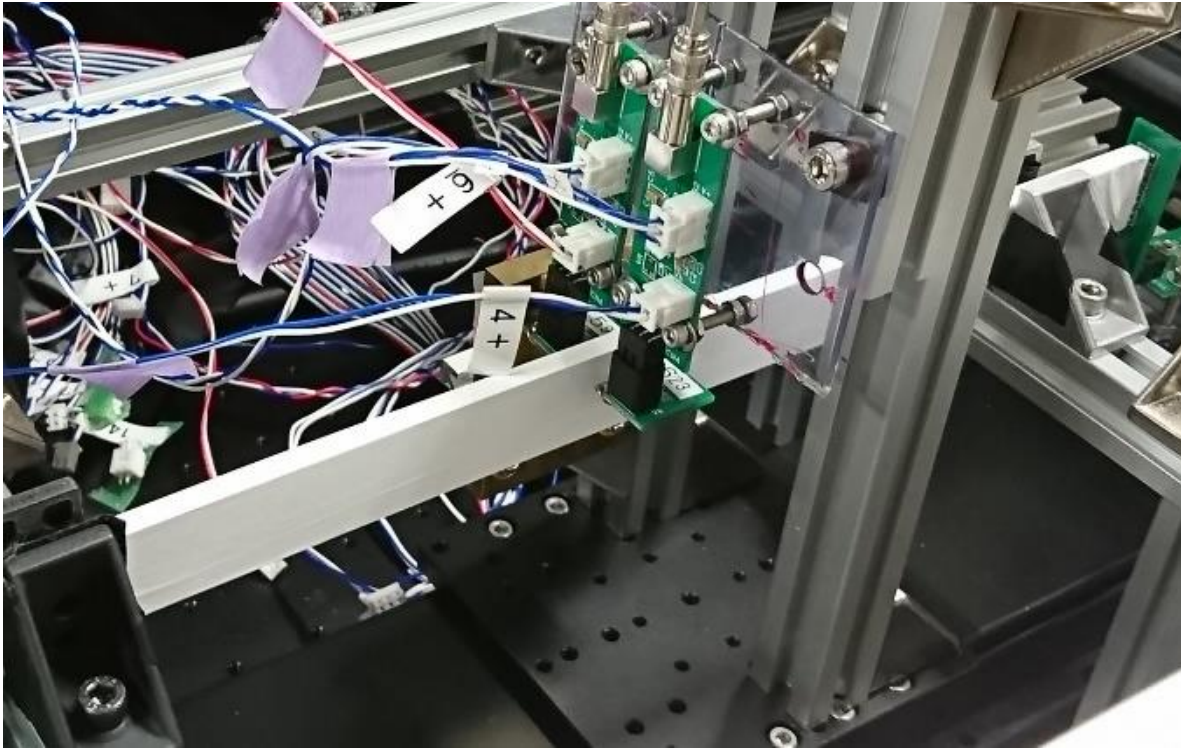
Setup



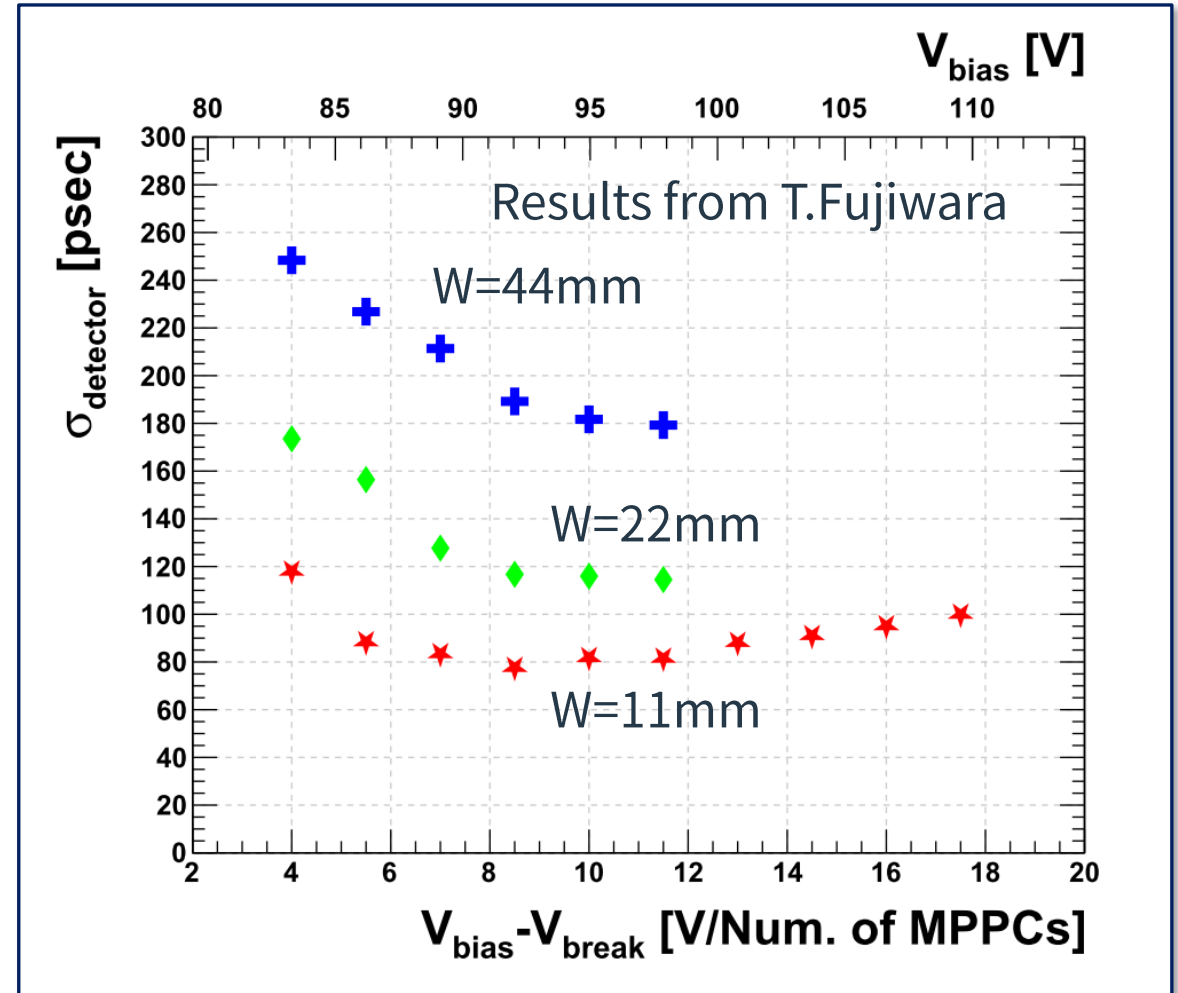
Setup



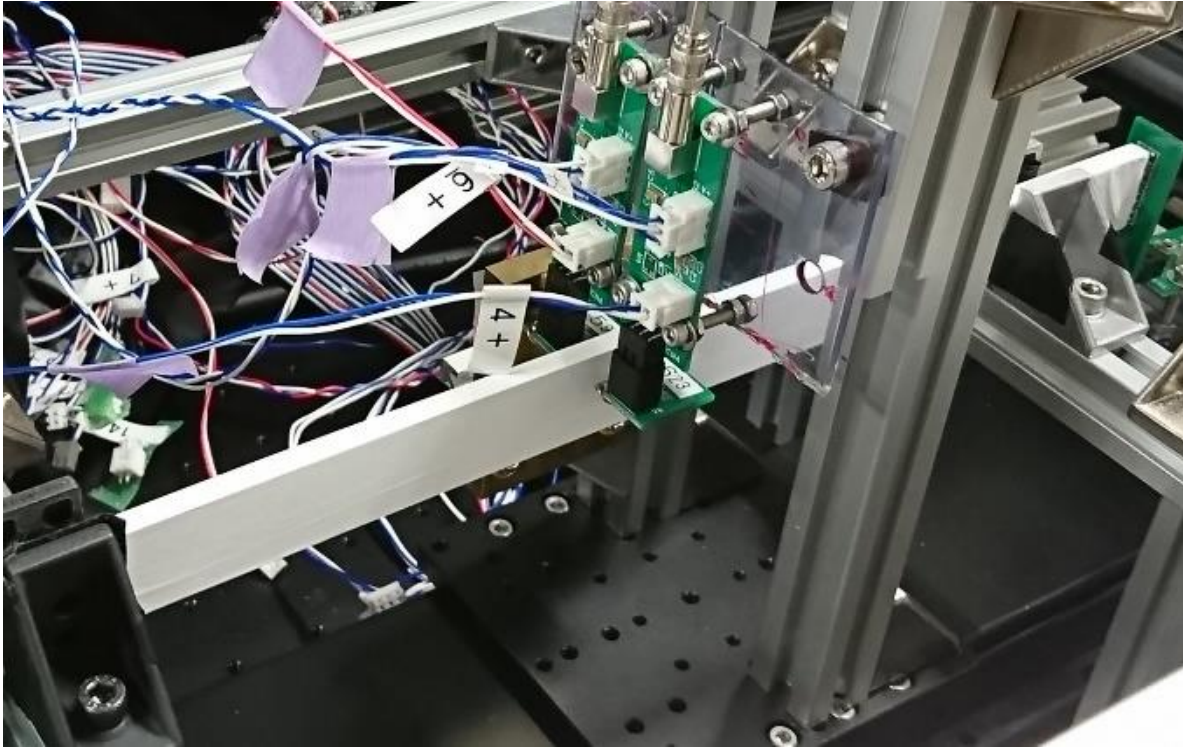
Time resolution



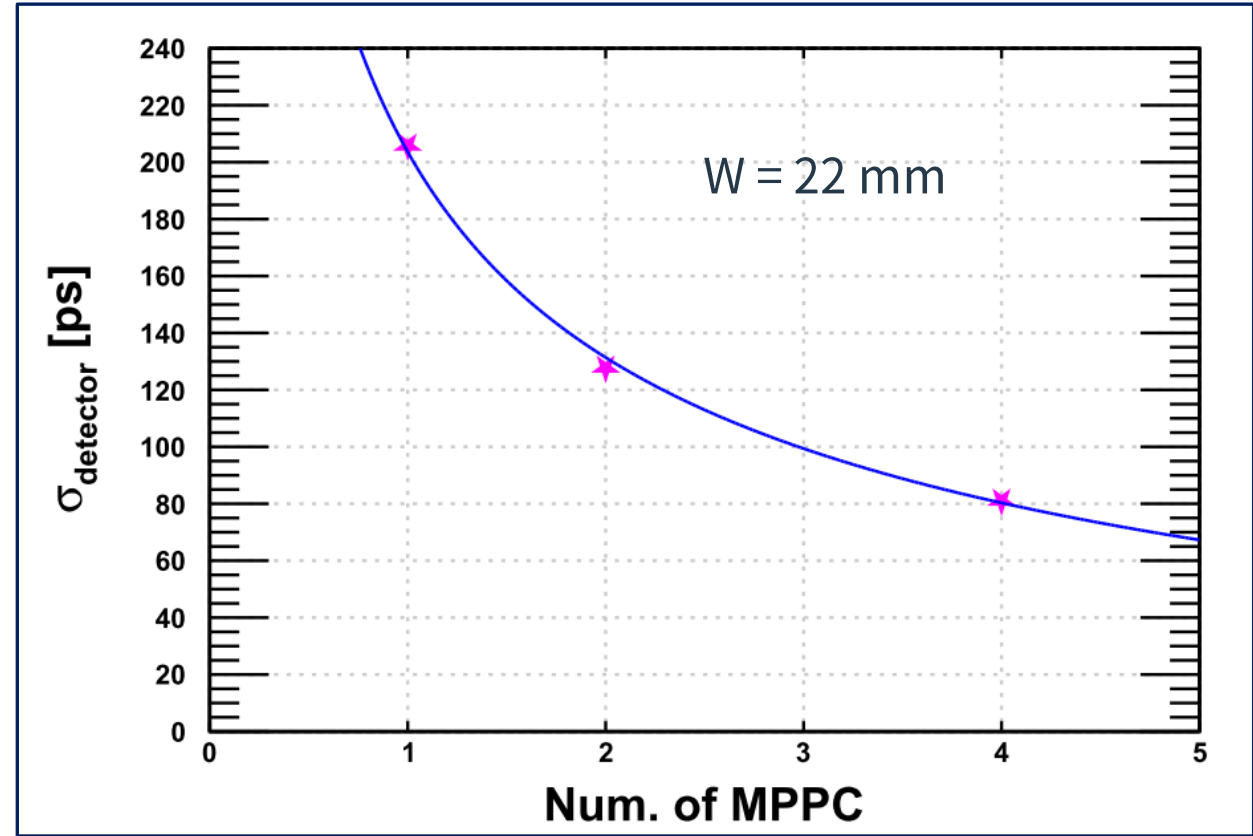
EJ-230 + Hamamatsu SiPM (S14160-3050)
Width, No of MPPCs, Thick, Length dependence.



Time resolution



EJ-230 + Hamamatsu SiPM (S14160-3050)
Width, No of MPPCs, Thick, Length dependence.



Schedule

Beamtime of hypernuclear experiment is not on schedule. I have to submit a proposal to ELPH PAC. Total beamtime of ELPH acc. is decreasing year by year due to an electric bill.

Development of detectors, readout system are necessary.

COVID-19

COVID-19 situation in Japan is more relax than that in E.U.

~ thousand (several tens) new cases per day in Japan (Sendai)

BCP level 1 (Max. 5) in Tohoku university

Class: Online, On-demand, Face-to-Face (it depends on classes.)

Experiment: No restriction

Travel: Not urgent (avoiding Tokyo area)

Overseas trip: Permission is necessary

We can't arrive at Mainz at least this fiscal year (~May 2021), perhaps.

Desk works (simulation, mechanical design) is okay.