The 2017 IEEE NSS-MIC

Industrial Presentation

TechnoAP

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Introduction of new ultra high count rate **Pileup Separator Processor** ideal for silicon drift detector and $LaBr_3$ scintillation detector

Tuesday, October 24

2:30:00 PM

Hanover Hall A-B

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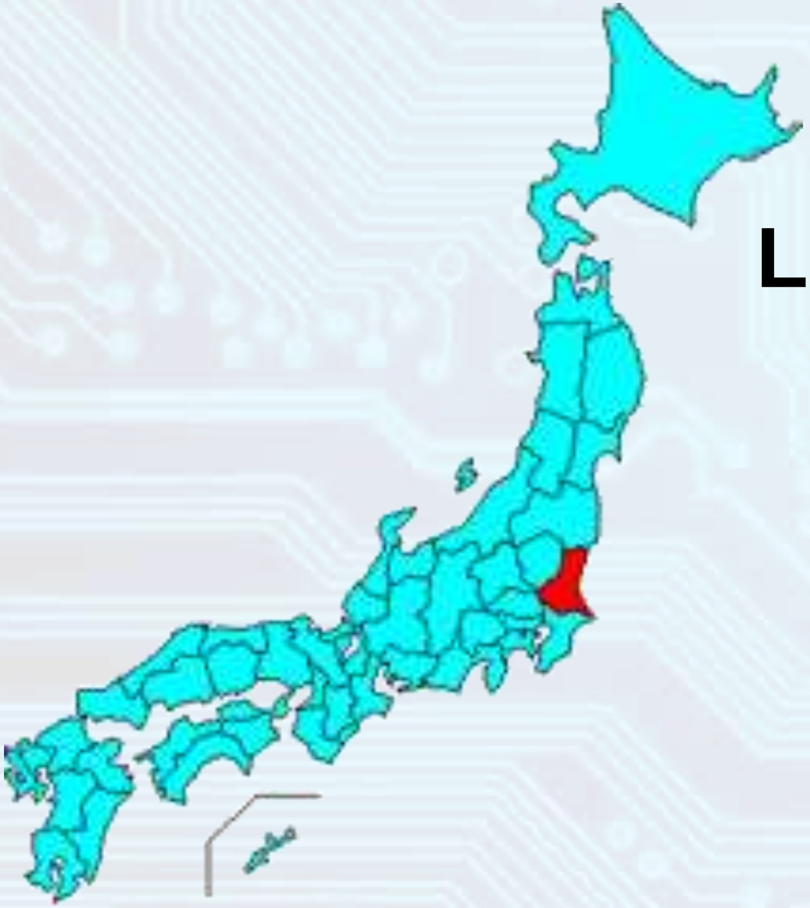

Located in Ibaraki, Japan

We have been manufacturing radiation measurement since August, 2000.

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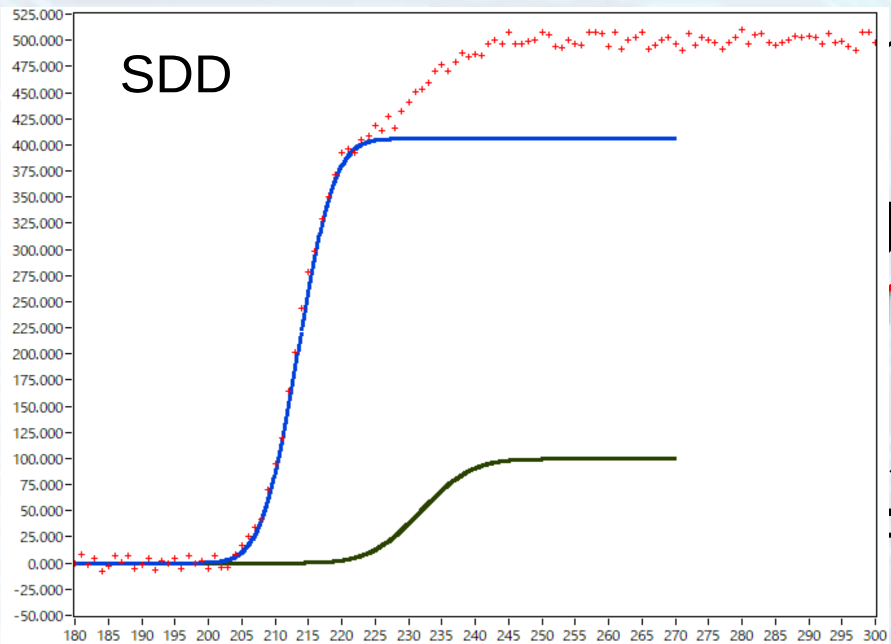
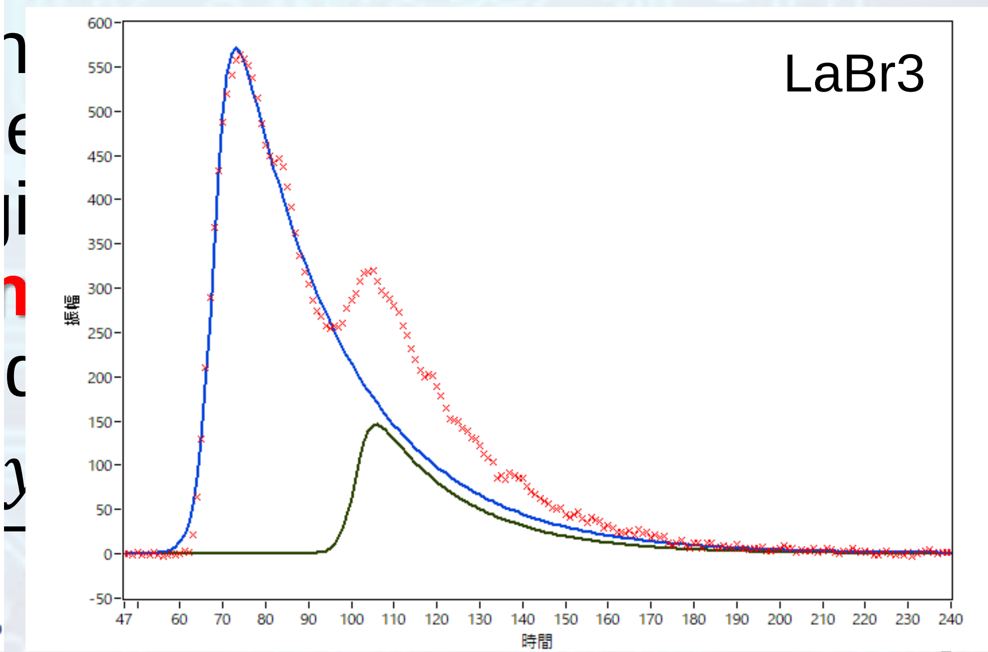
Signals piled up so far have **been removed** from measurements by the pileup reject function or have been used as **error signals** as they are without rejecting. The reason why this pile up signal was processed and not reused was that the **load on the computer** to be obtained analytically became **too high** and could not be processed in real time.

We have developed a **hardware processor** that separates pileups in **Real time**.

New Pileup Separator Processor

The piled up signal is separated by the **nonlinear least squares method**.
The nonlinear least squares method is one of the curve fitting methods for observation data and is a nonlinear model function extension of





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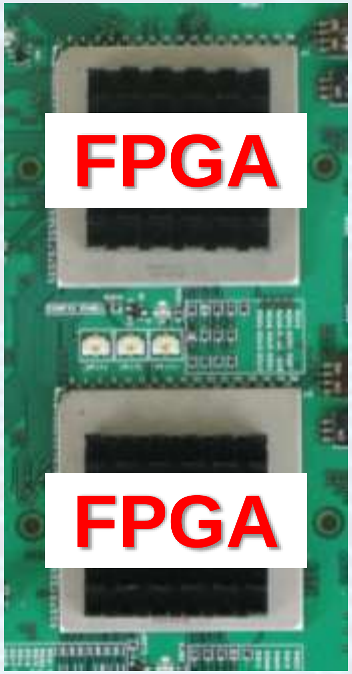
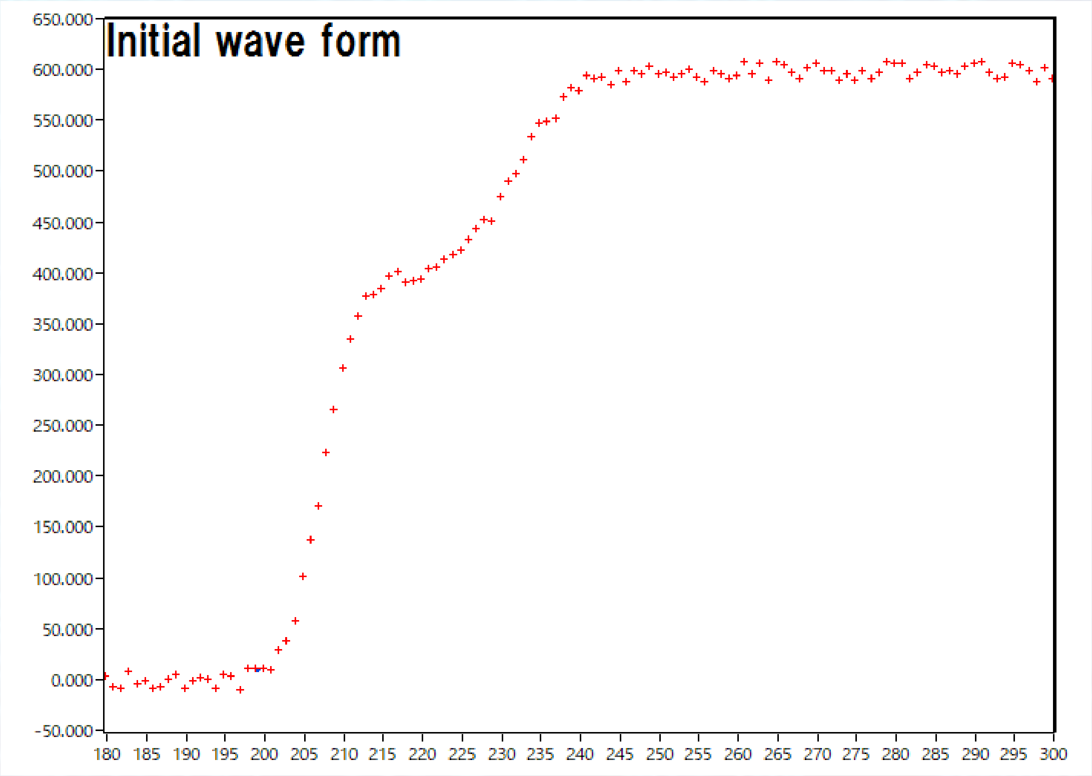
New Pileup Separator Processor

The following animation shows one of the repeated calculations.





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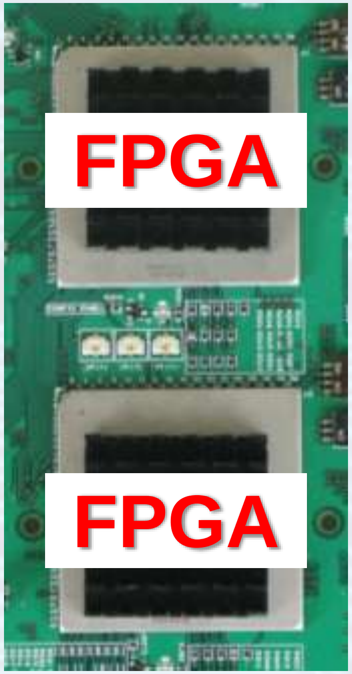
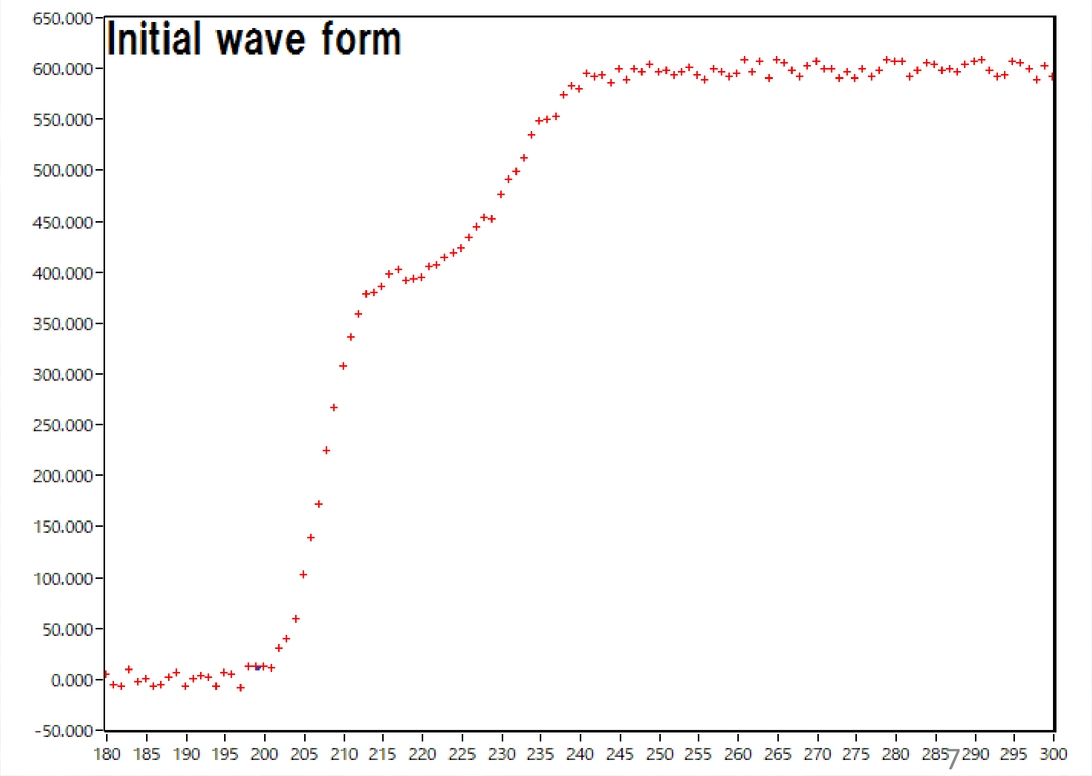
New Pileup Separator Processor

The following animation shows one of the repeated calculations.

The nonlinear least squares method can be checked **repeatedly until fitting optimally**.





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New Pileup Separator Processor

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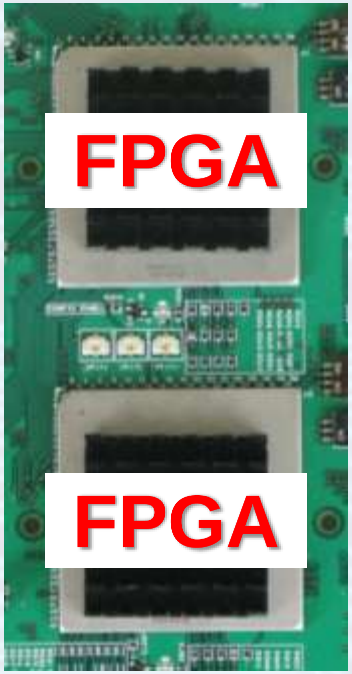

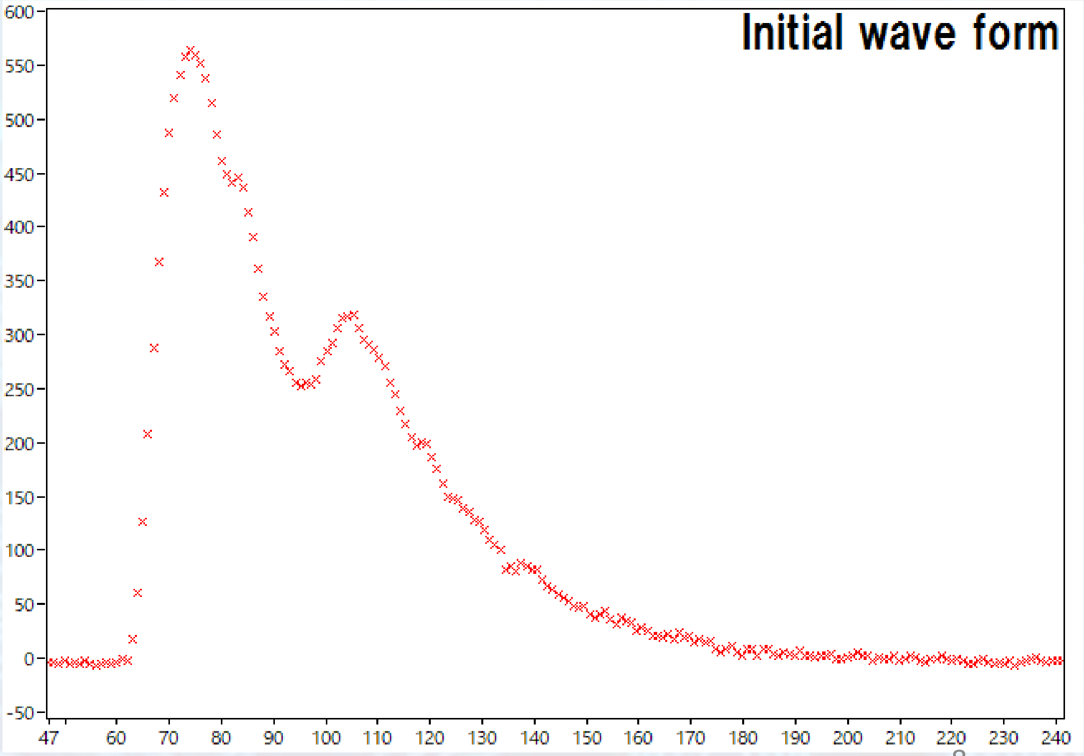

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New Pileup Separator Processor

Functions : **Real time**
Pileup Separator

In Signal : SDD etc.

Functions : **Real time**
Pileup Separator

In Signal : Fast-scintillator anode direct

100Msps
16-bit

1Gsps
14b-it

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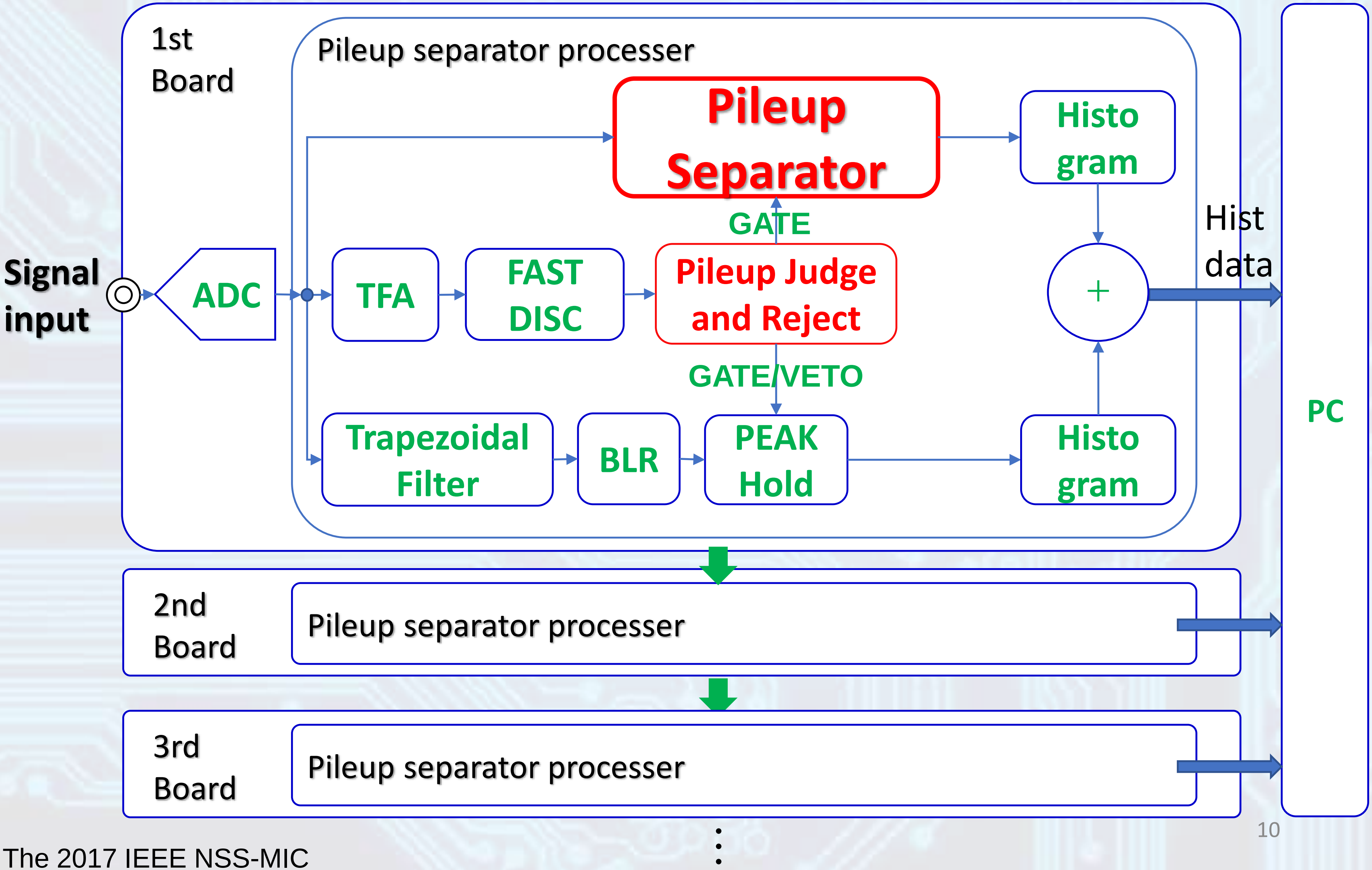
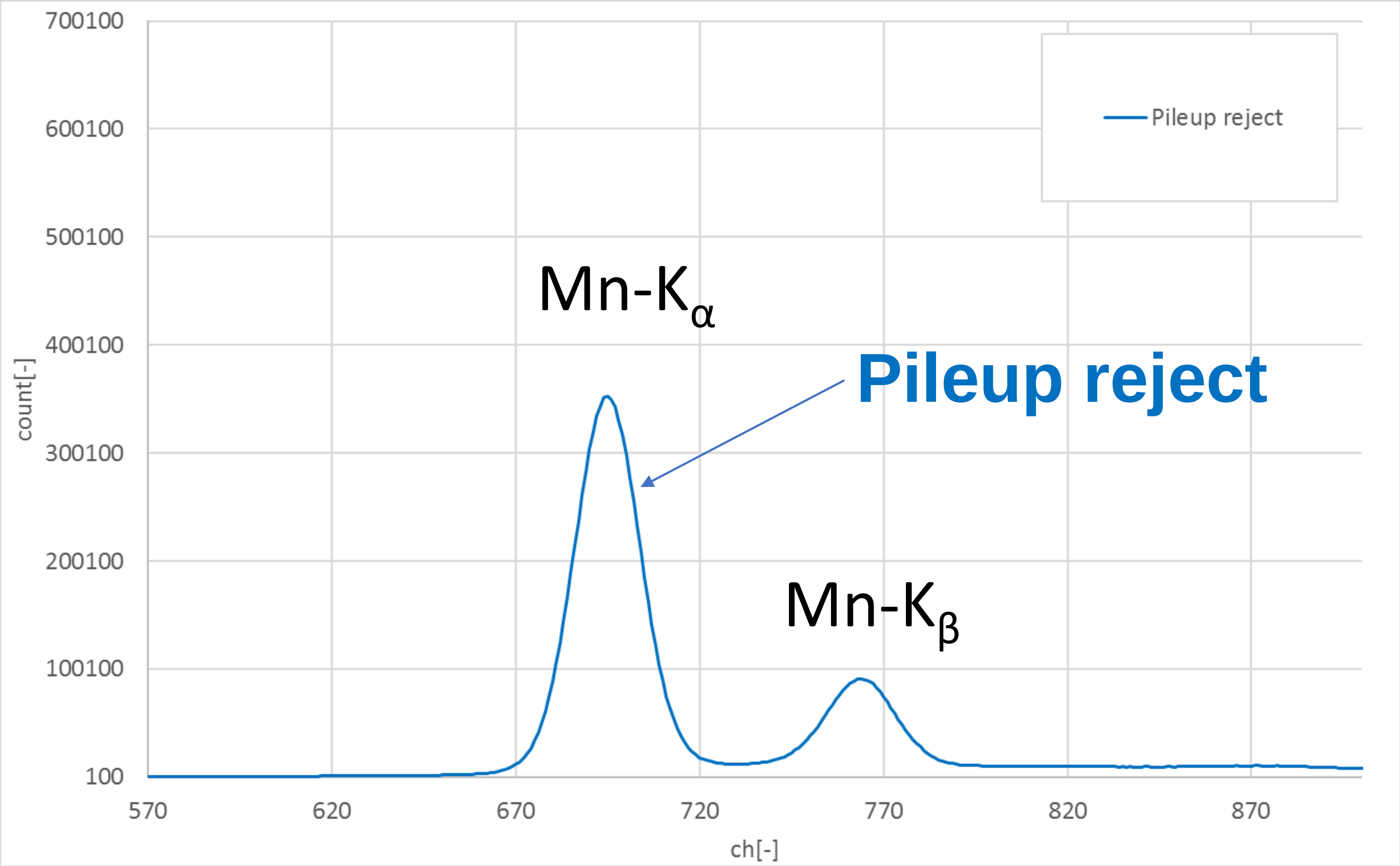
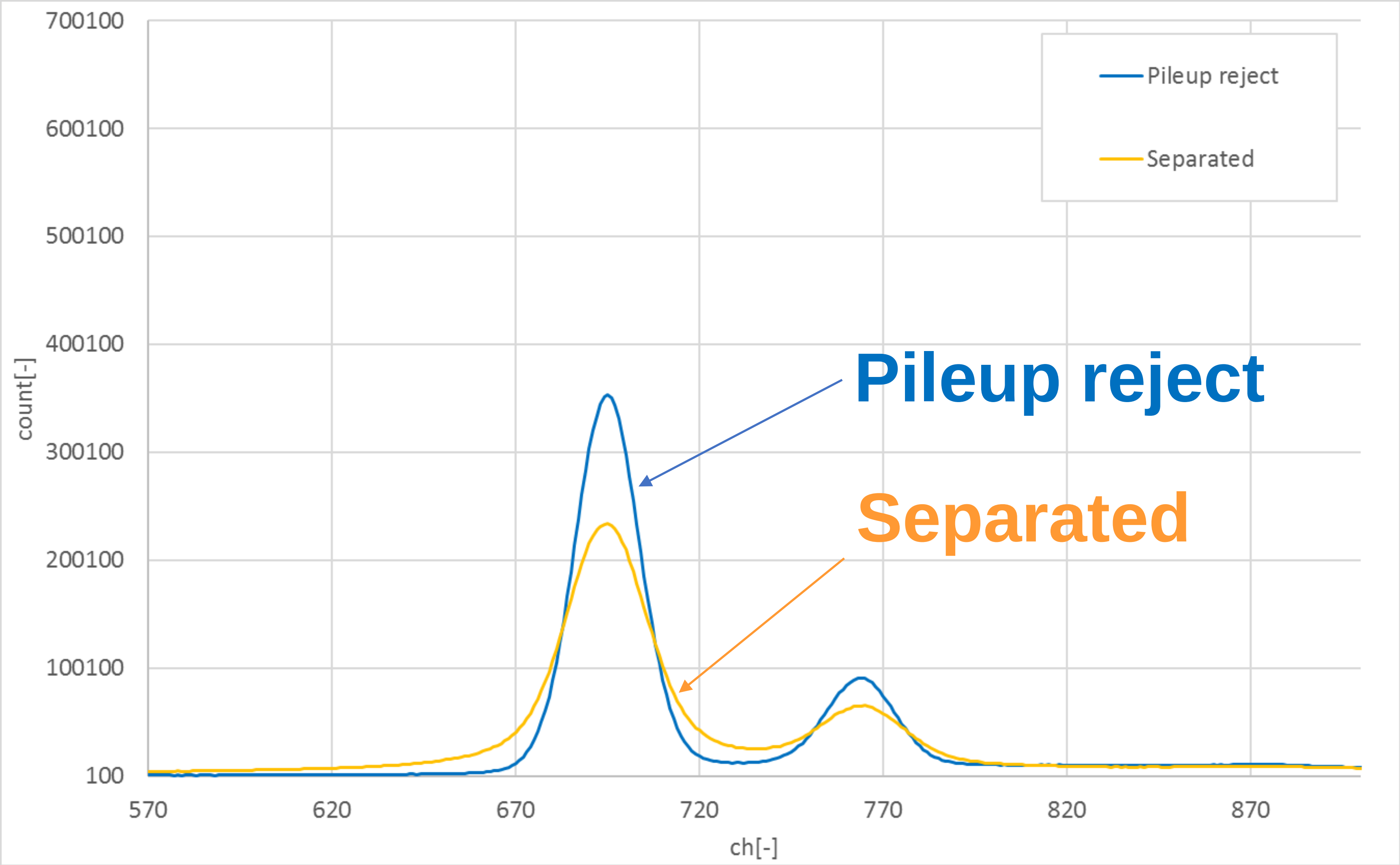
New Pileup Separator Processor Block Diagram



Mn spectrum by SDD



Mounting pileup separator



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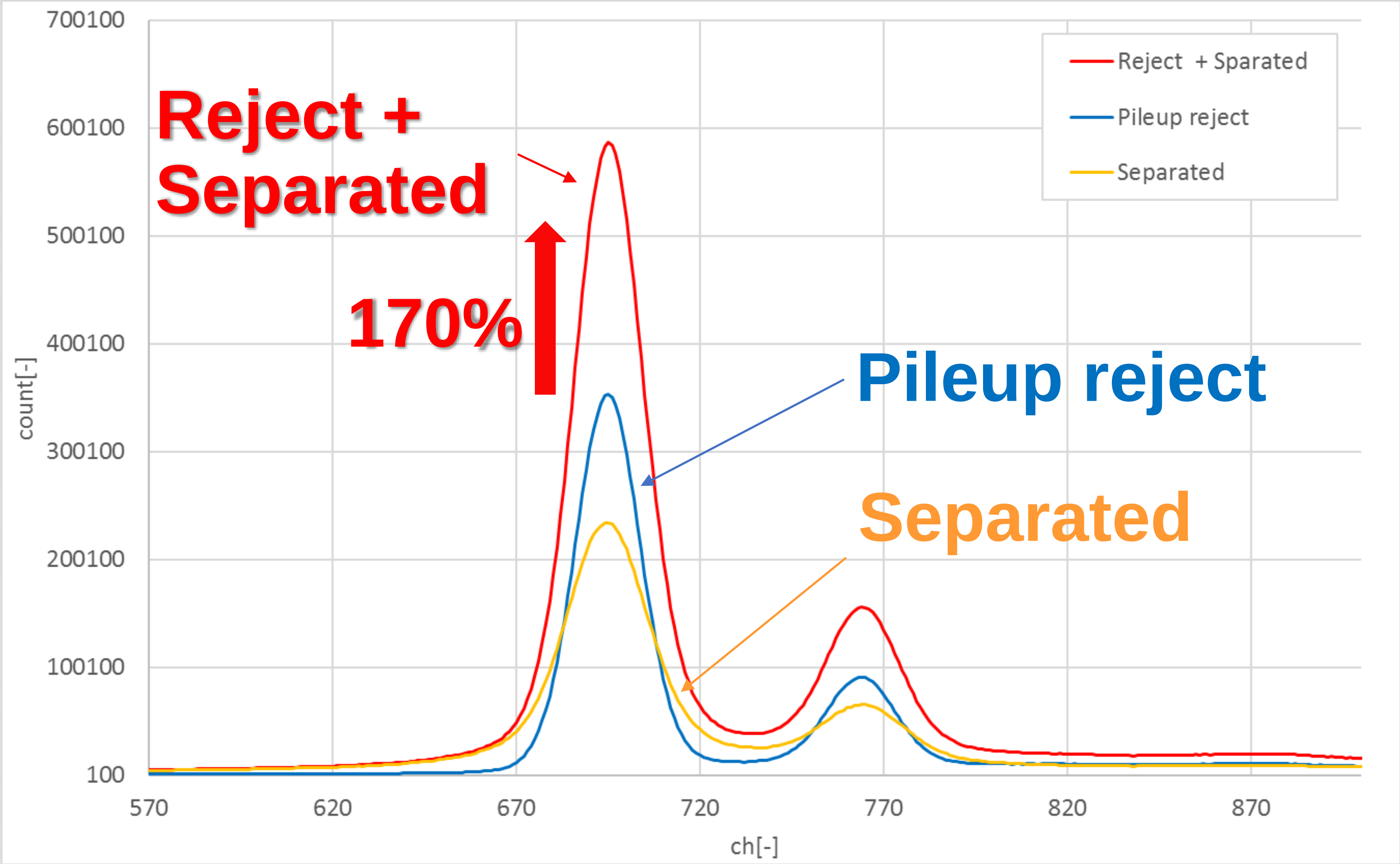
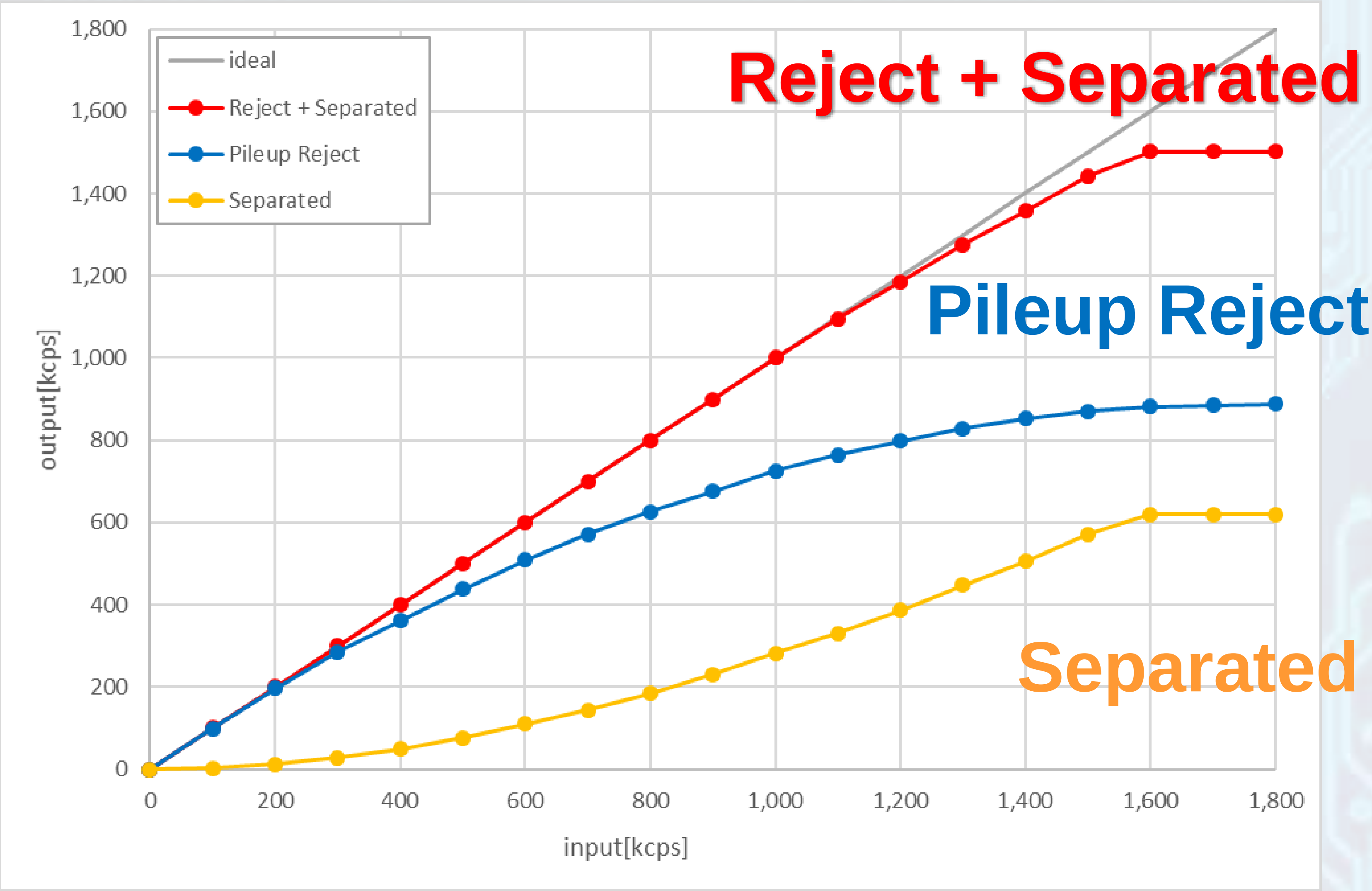
Combining separator spectra @ICR 1.5Mcps



Input vs. output rate by 1 board



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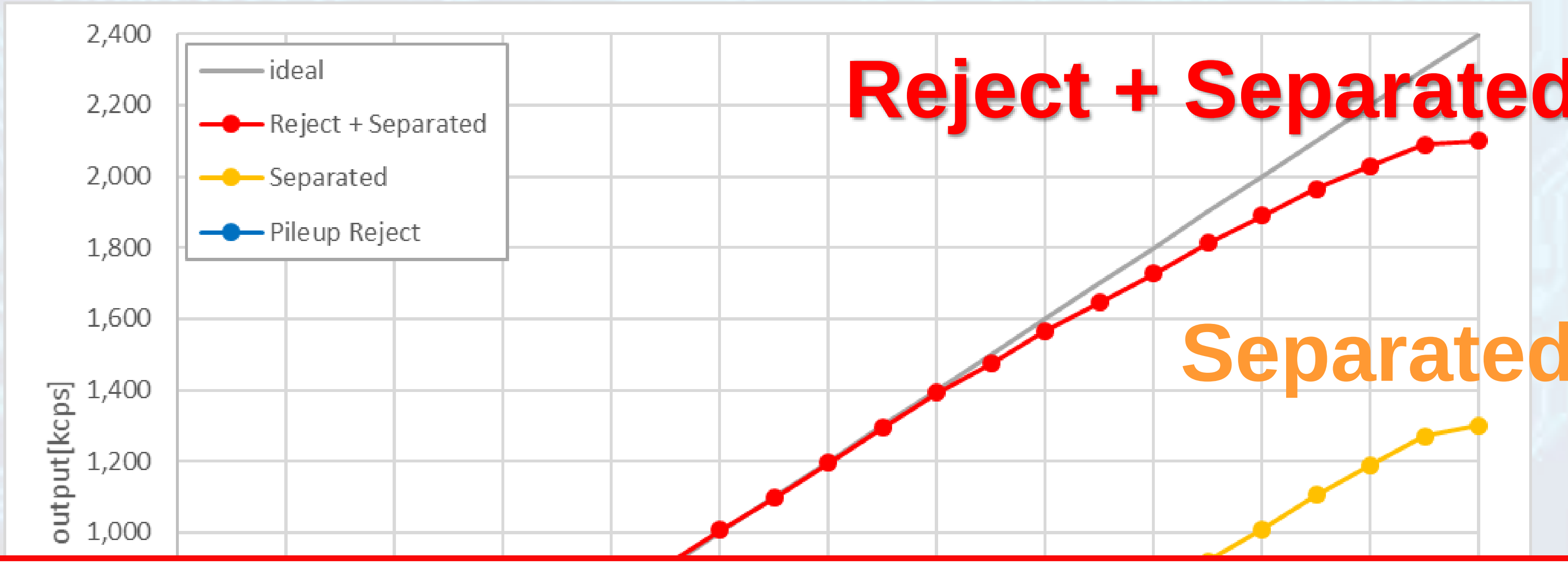
Input vs. output rate by 2 boards



By connecting more boards, you can get bigger output.
For details, please visit us at the booth No. 218.

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DSP (Digital Signal Processing) VME Standard

For several scintillation detectors

- APV8516-8 (16 Ch. 500Msps, 8-bit)
- APV8104-14 (4 Ch. 1Gsps, 14-bit)
- APV8702-8 (2 Ch. 3Gsps, 8-bit)
- APV85G4-10 (4 Ch. 5Gsps, 10-bit)

For HPGe semiconductor detector, SDD, Si(Li), etc.

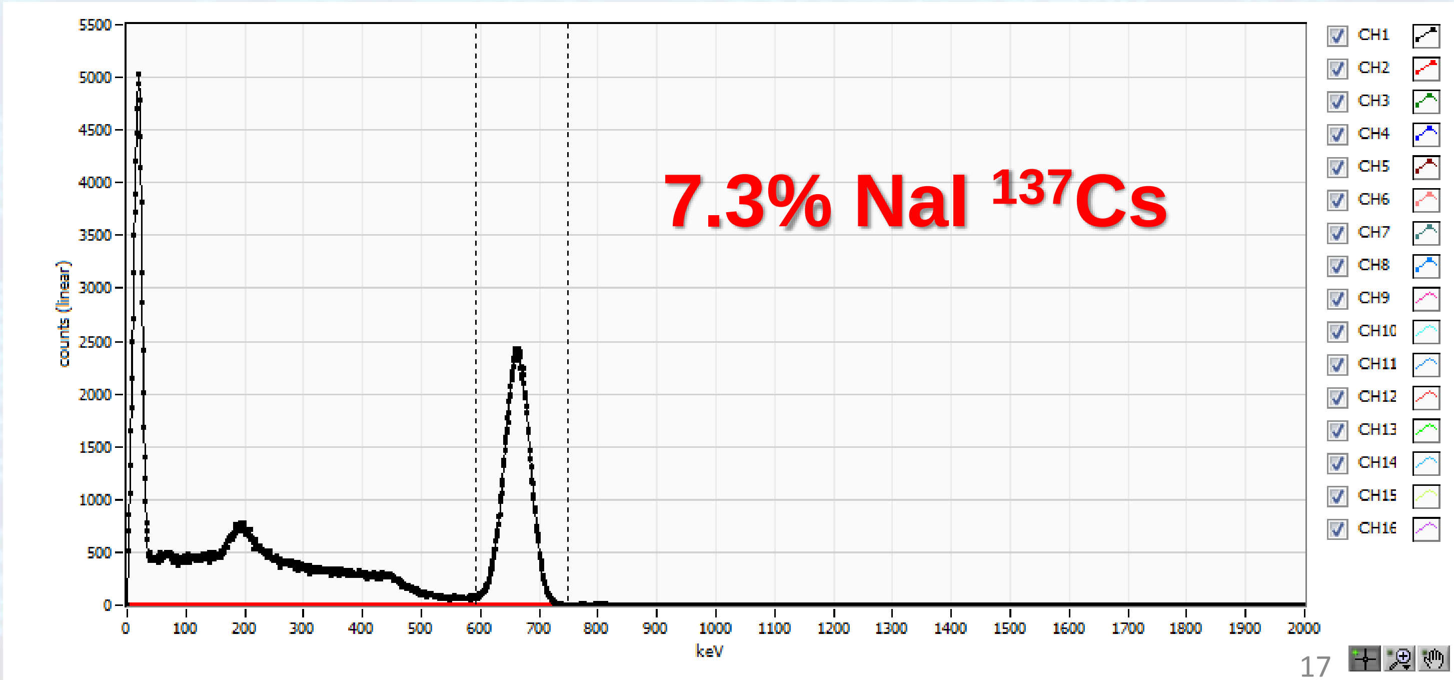
- APV8004 (4 Ch. 100Msps, 14-bit)
- APV8016 (16 Ch. 100Msps, 14-bit)

APV8516-8 (16 Ch. 500Msps, 8-bit)

Functions : Real time Digital CFD, TDC, QDC

In Signal type : PMT anode signal **a lot of CH** etc.

Application : $LaBr_3$ anode signal a lot of CH

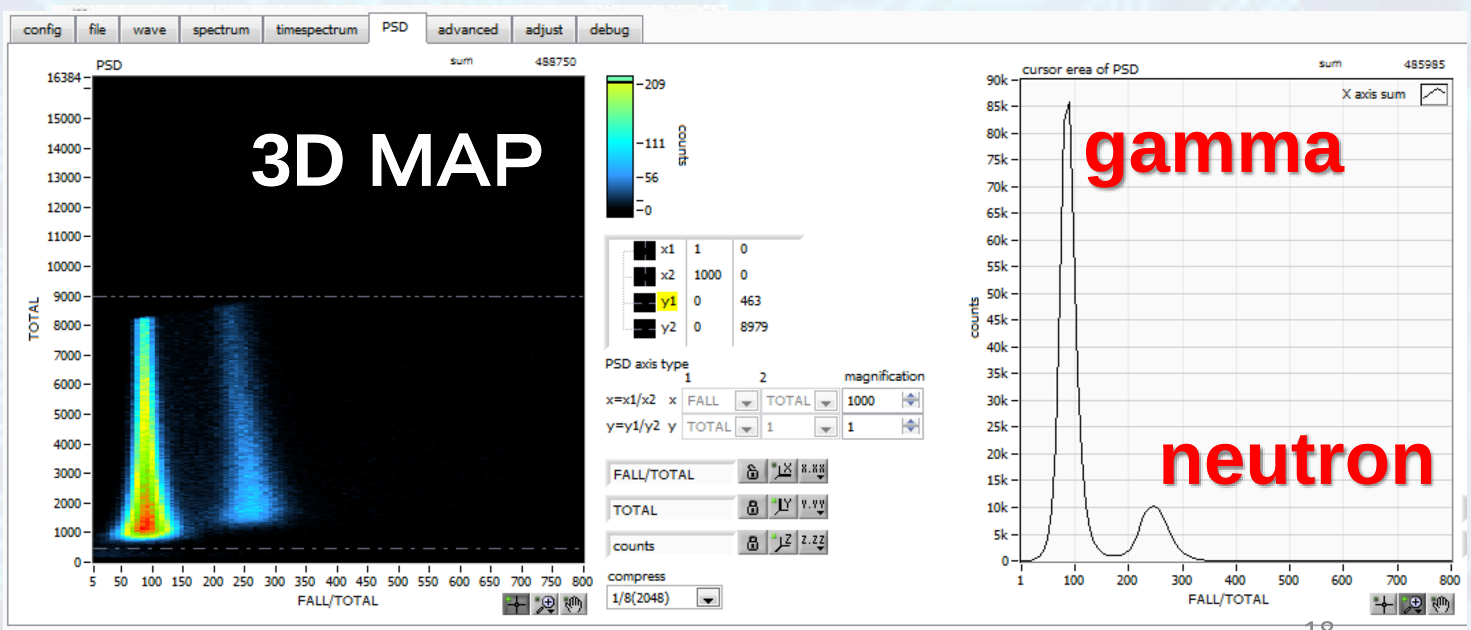


APV8104-14 (4 Ch. 1Gsps, 14-bit)

Functions : **Real time Digital PSA**

In Signal type : PMT anode signal, liquid Scintillator etc.

Application : Discrimination neutron & gamma. for Liquid scintillator



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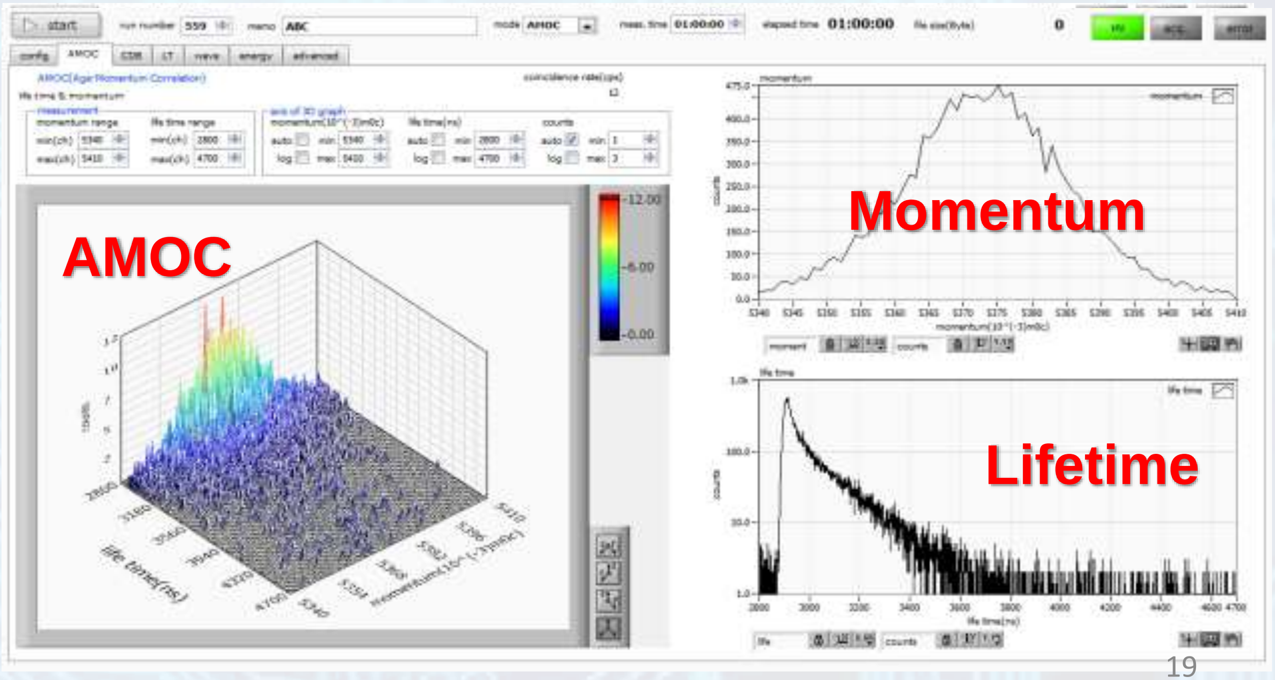
APV8702-8 (2 Ch. 3Gsps, 8-bit)

Functions : **Real time Digital CFD**

In Signal type : Ultra high-speed scintillation detectors etc.

Application : Positron Lifetime Measurement

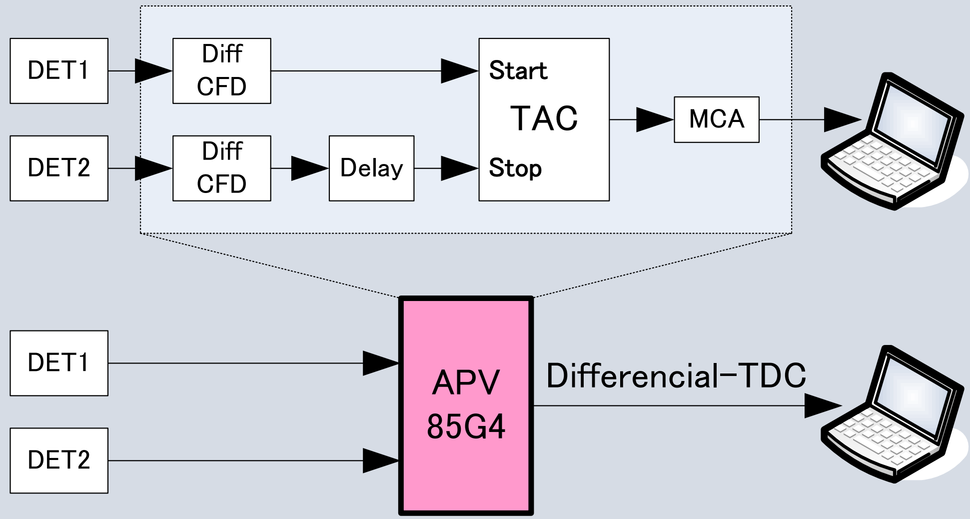


APV85G4-10 (4 Ch. 5Gsps, 10-bit)

Functions : **Real time Digital CFD, PSA**
In Signal type : PMT anode signal, Fast-NIM

Application : PSA, WAVE-LIST, Positron Life Time System

Positron Life Time System

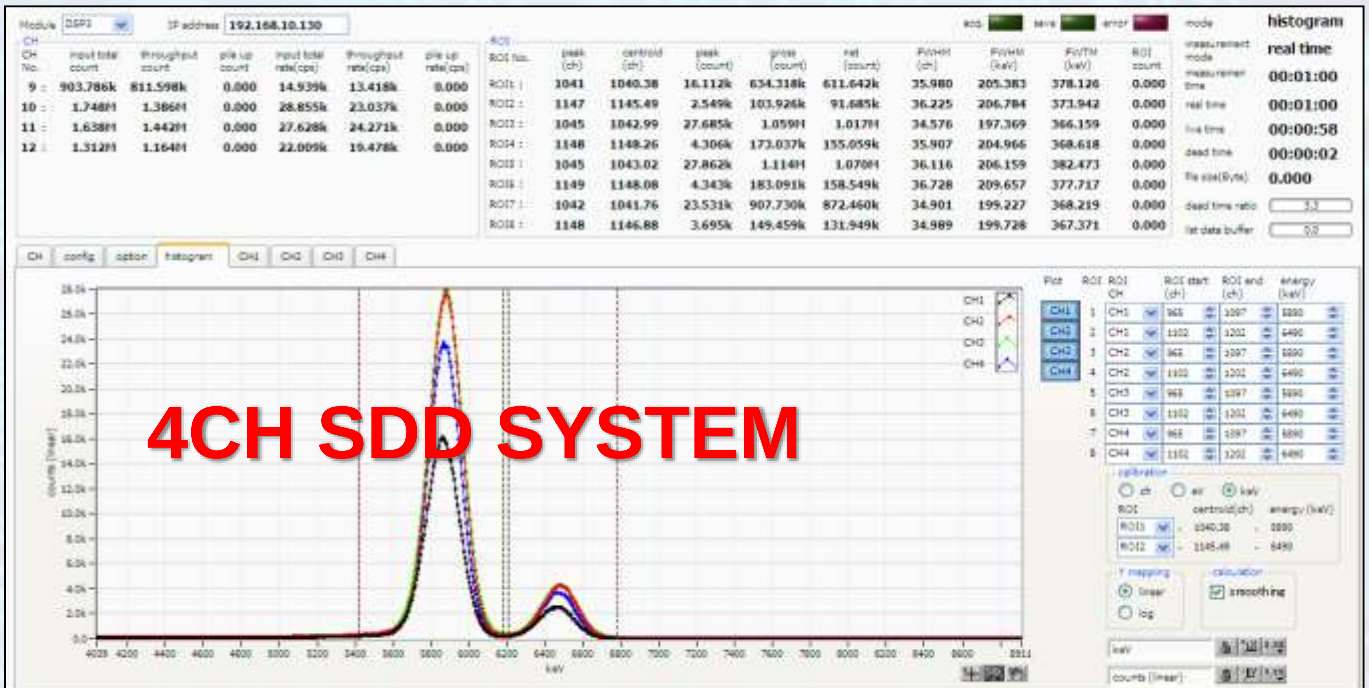


APV8004 (4 Ch. 100Msps, 14-bit)

Functions : **Real time Trapezoidal filter**

In Signal type : HPGe, SDD, CdTe, Si(Li), SiPin

Application : Coincidence Doppler Broadening
Rise Time Measurement
Waveform-List



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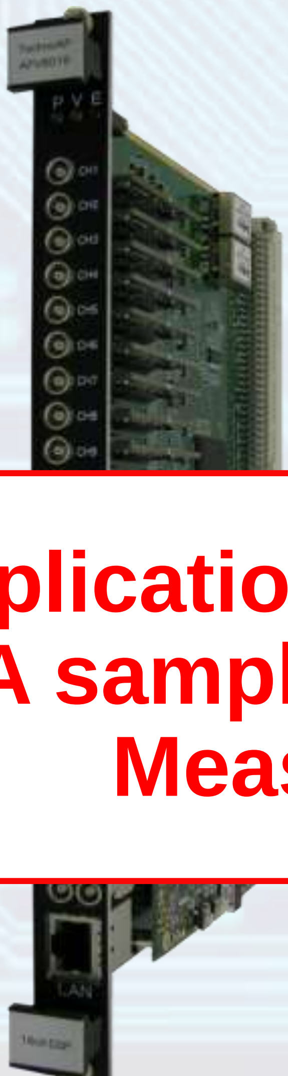
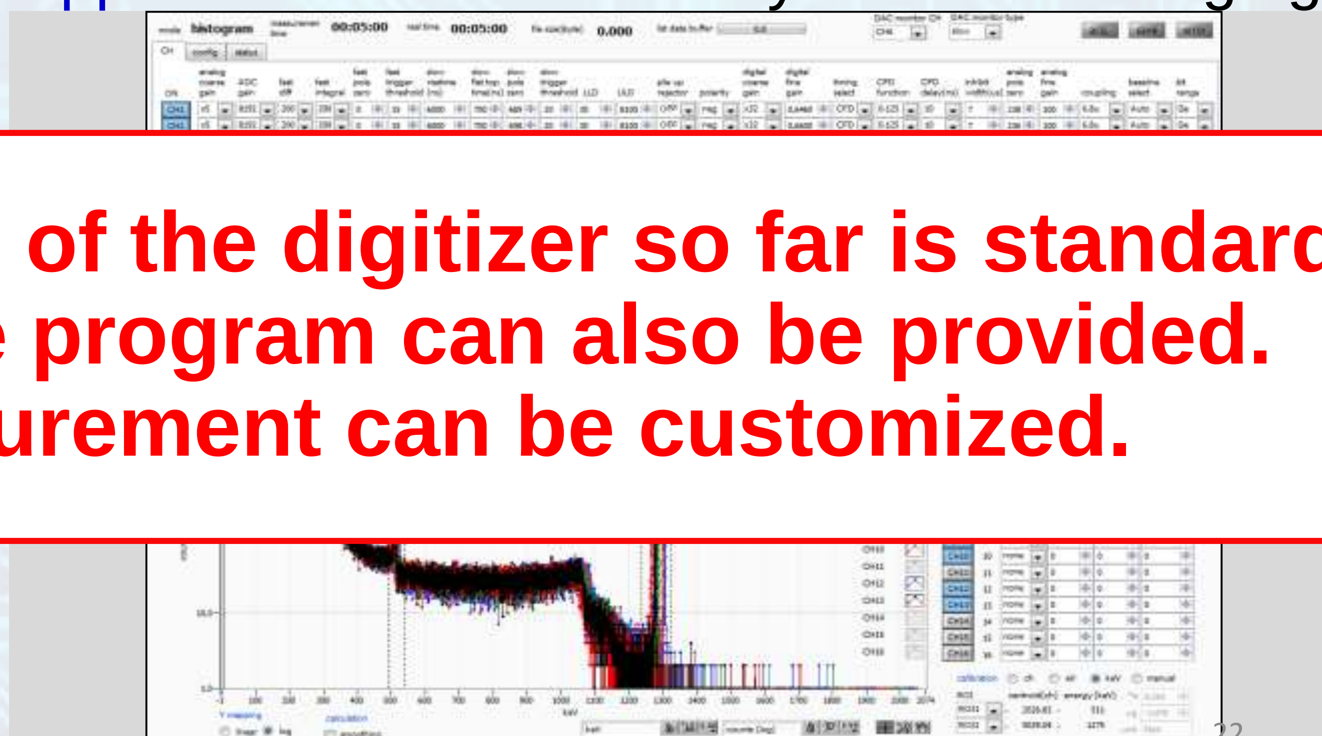
APV8016 (16 Ch. 100Msps, 14-bit)



Functions : Real time Trapezoidal filter
In Signal type : Ge, SDD, SSD, Si(Li), SiPin
a lot of CH etc.

Application : Gamma-Ray Emission Imaging



Application of the digitizer so far is standard.
A sample program can also be provided.
Measurement can be customized.

Introduction of

Silicon Drift Detector System

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Multi element SDD system

- Detectors are also available with windowless construction.
- High Rate Performance
- Ultra-fast Digital Pulse Processors
- Designed to suit customer requirements.

CUSTOM MADE
for your needs!


XSDD50-01


XSDD50-04


XSDD50-07

Thank you

TechnoAP work with end station designers

to achieve the best solution.

If you are interested in our products, please visit us.

Booth No. 218