How to use quickViewer

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quickViewer.C

quickViewer.C is a macro for drawing projection plots of events quickly without doing any reconstruction.

It is located in **macro/checkingMacro/quickViewer.C**.

Configuring the macro file

If you open the macro file, you can see the configuring part like the picture below.

```
 1 /**
 2  * This macro provides only one 2D pad plane with signal plots on clicked pad.
 3  * (Either gain not calibrated or calibrated plot.)
 4 **/
 5
 6 /////////////////////////////
 7 //                         //
 8 //   Configuration part    //
 9 //                         //
10 /////////////////////////////
11
12 // Put the parameter file name. Path is automatically concatenated.  ①
13 TString fParameterFile = "ST.parameters.par";
14
15 // Set the raw data file with path    ②
16 TString fDataFile = "";
17
18 // Set the gain calibration data file. If not, assign "".  ③
19 TString fGainCalibrationData = "";
20
21 // Set the reference values for gain calibration
22 Double_t fReferenceConstant = 0.0410293;     ④
23 Double_t fReferenceLinear = 1.69946E-3;
24 Double_t fReferenceQuadratic = -3.05356E-8;
25
26 // FPN pedestal range selection threshold   ⑤
27 Int_t fFPNThreshold = 100;
```

1. Parameter file name
   - Just write the file name with extention. Don't add any path in front of it. The code will look for the **parameters** folder to find the matching parameters file. By specifying this file, the code will know which mapping file to use and the length of time buckets.
2. Raw data file name
   - Put in the raw data file with path. You can skip the path if the file is located in the same folder with the macro file.
3. Gain calibration data file name
   - Put in the gain calibration data ROOT file. This will be generated by analyzing pulser data (in current stage) with running the macro located in **gainCalibrationMacro/makeGainCalibraion.C**.
4. Set the gain reference values
   - Pulser data is analyzed and fitted with quadratic equation. Therefore, to match the gain the code needs three parameters: constant(offset), coefficient of linear term and coefficient of quadratic term. If the gain calibration data file is empty,

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these values are just ignored.
5. FPN sigma threshold
   ○ When subtracting pedestal using FPN channels, this value is used as threshold for selecting baseline.
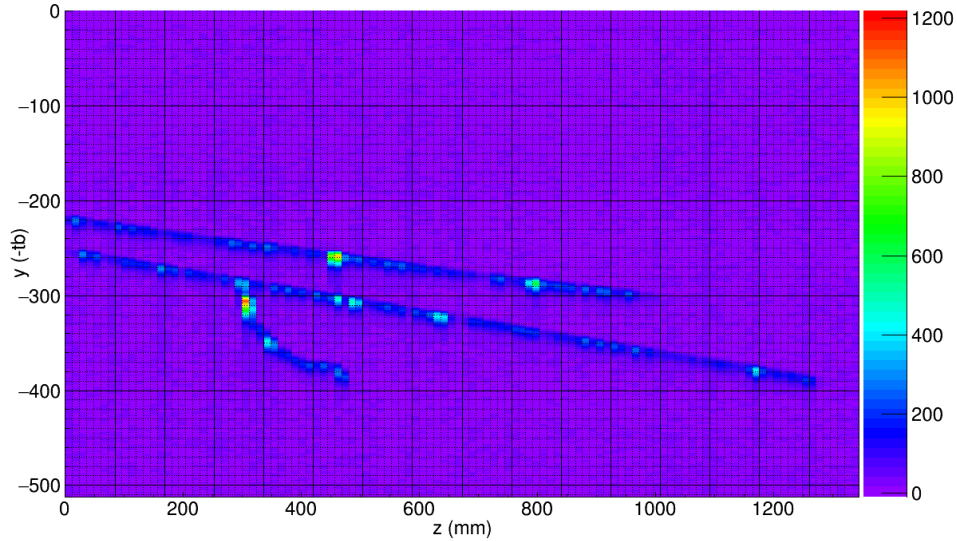
Demonstration

The following figures are generated by quickViewer.C. By default it generates two plots:

1. event projected on pad plane and viewed from top
2. event projected on beam left-most plane and viewed from beam right side

Event ID: 10 (Gain not calibrated) - Top view
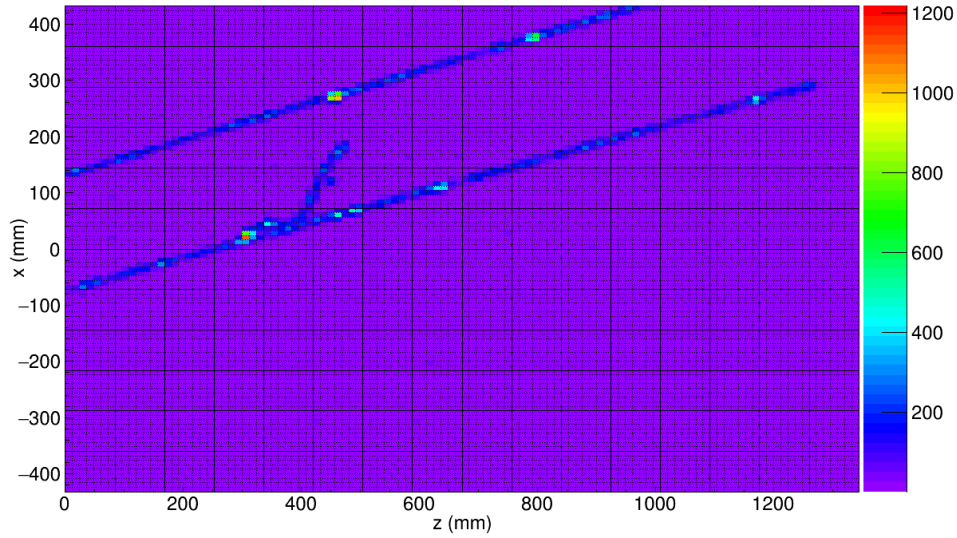
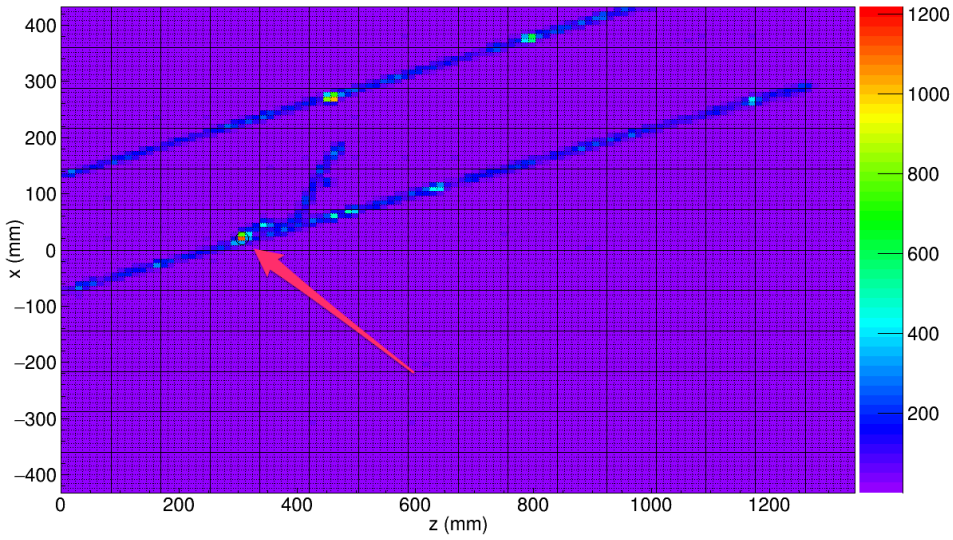### Event ID: 10 (Gain not calibrated) - Beamright view

In both plots, you can click on the plot.

- For the top view plot, you can inspect the signal of a pad before and after the FPN subtraction by clicking the pad.
- For the beam right view plot, you can inspect the upstream view of a layer by clicking the layer.

Each plot gives you which pad or layer is clicked on the plot.
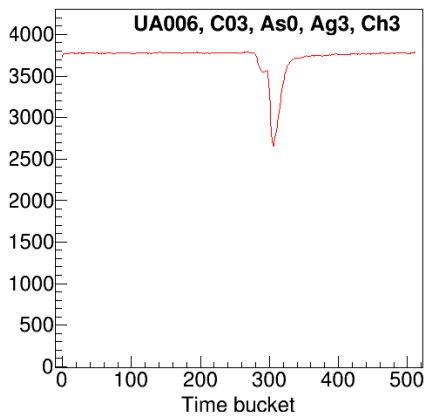
Event ID: 10 (Gain not calibrated) - Top view

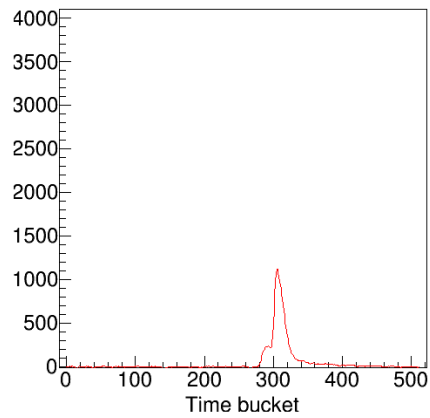Event ID: 10 (Gain not calibrated) - Beamright view
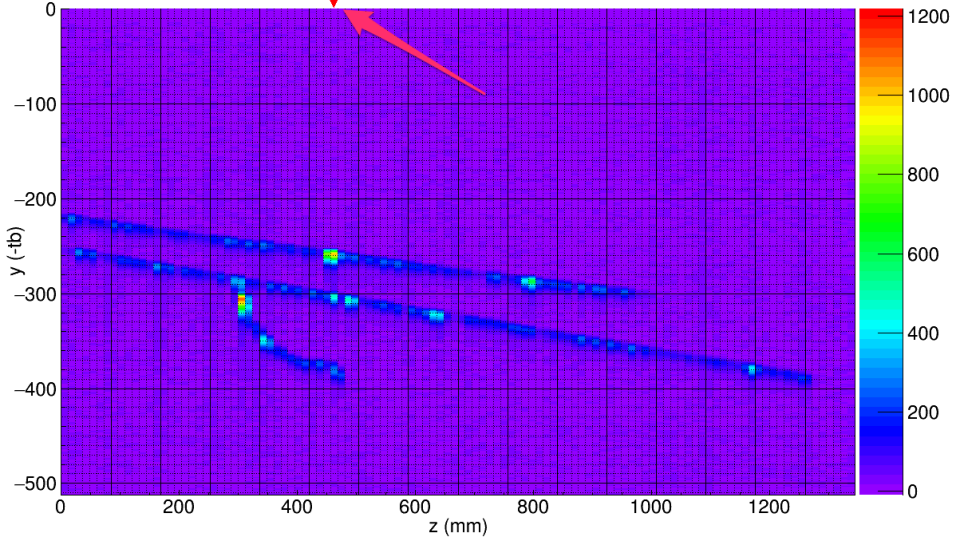
The inspection plots look like the below.

Raw ADC - (row=56, layer=25)

UA006, C03, As0, Ag3, Ch3

ADC(FPN subtracted) - (row=56, layer=25)

Event ID: 10 - Layer: 38 - Upstream view