

Status Report

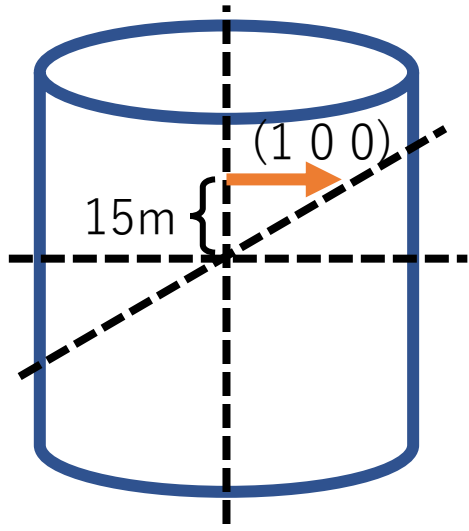
Isao Sashima
Sep. 11 , 2020
mPMT meeting

< laser simulation >

- changed the tuning parameters and laser position

< IPMU measurement >

- solved the digitizer issue with the help of Yamaguchi-san
- confirmed that I can measure the waveforms as well as before.



- 3.18eV optical photon (400nm)
- laser direction : (1 , 0 , 0)
- laser position : (0 0 15m)
- 10000×1000

tuning parameters

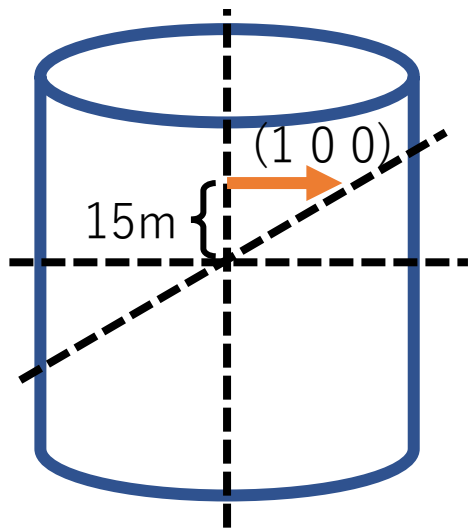
- abw : 1.30 water absorption
- rgc : 0.32 glass/cathode reflectivity
- ray : 0.75 Rayleigh scattering
- bsr : 2.5 black sheet reflectivity

- abw : higher = less absorption
- rgc : higher = more reflection
- ray : higher = less scattering
- bsr : higher = more reflection

```

1 # Set tuning parameters
2 /WCSim/tuning/abwff 1.30
3 /WCSim/tuning/rgcff 0.32
4 /WCSim/tuning/rayff 0.75
5 /WCSim/tuning/bsrff 2.5
6 /WCSim/tuning/mieff 0.0
7
8 # Parameters to set up Top Veto - jl145
9 # Set to "1" to turn on top veto.
10 /WCSim/tuning/topveto 0
11 # Set top veto PMT spacing in cm.
12 /WCSim/tuning/tvspacing 100
13
14

```



```

193 /mygen/generator laser
194 /gps/particle opticalphoton
195 /gps/energy 3.18 eV
196 /gps/direction 1 0 0
197 /gps/position 0 0 15 m
198 /gps/number 10000
199 # /gps/ang/type iso
200 # /gps/ang/mintheta 0 deg
201 # /gps/ang/maxtheta 180 deg
202 # /gps/ang/minphi 0 deg
203 # /gps/ang/maxphi 360 deg
204 /gps/verbose 0

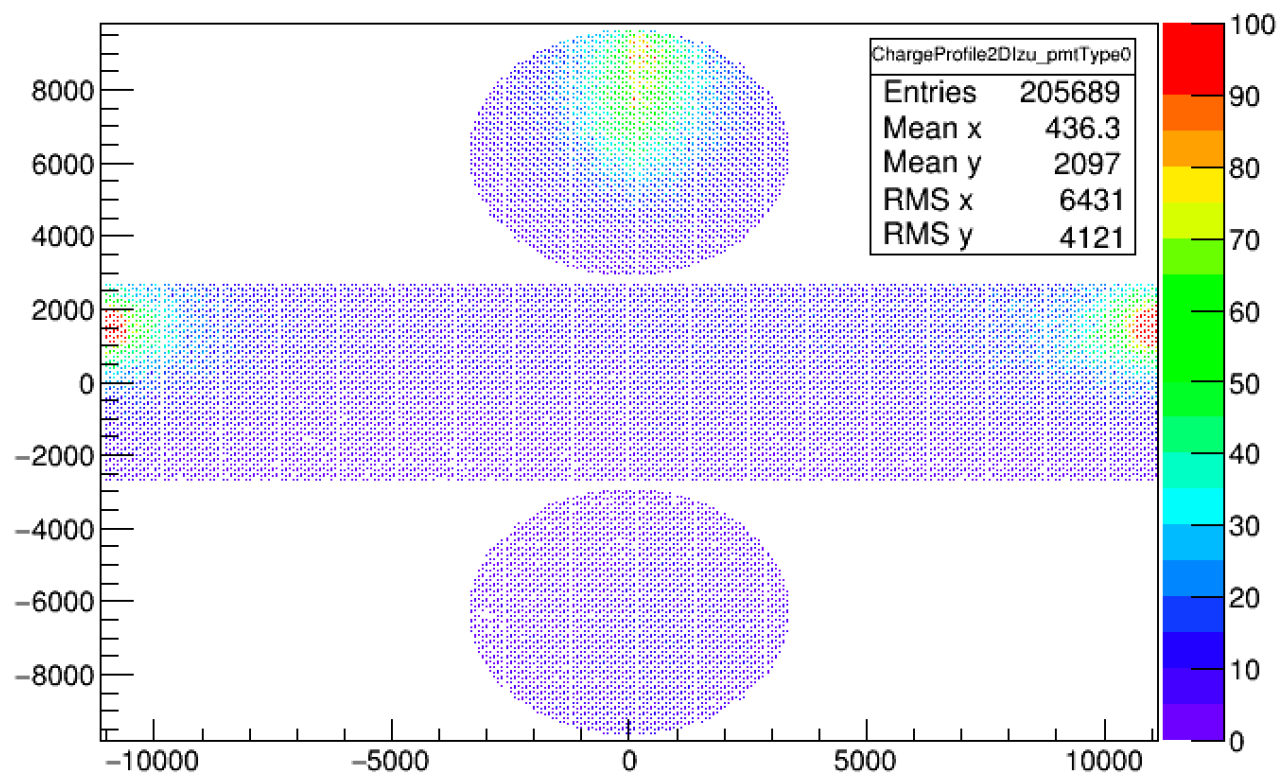
```

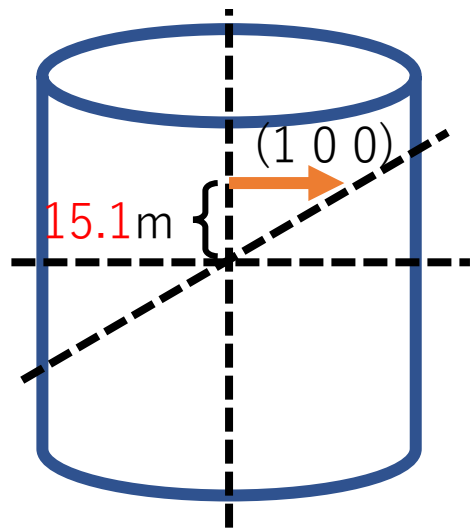
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B&L

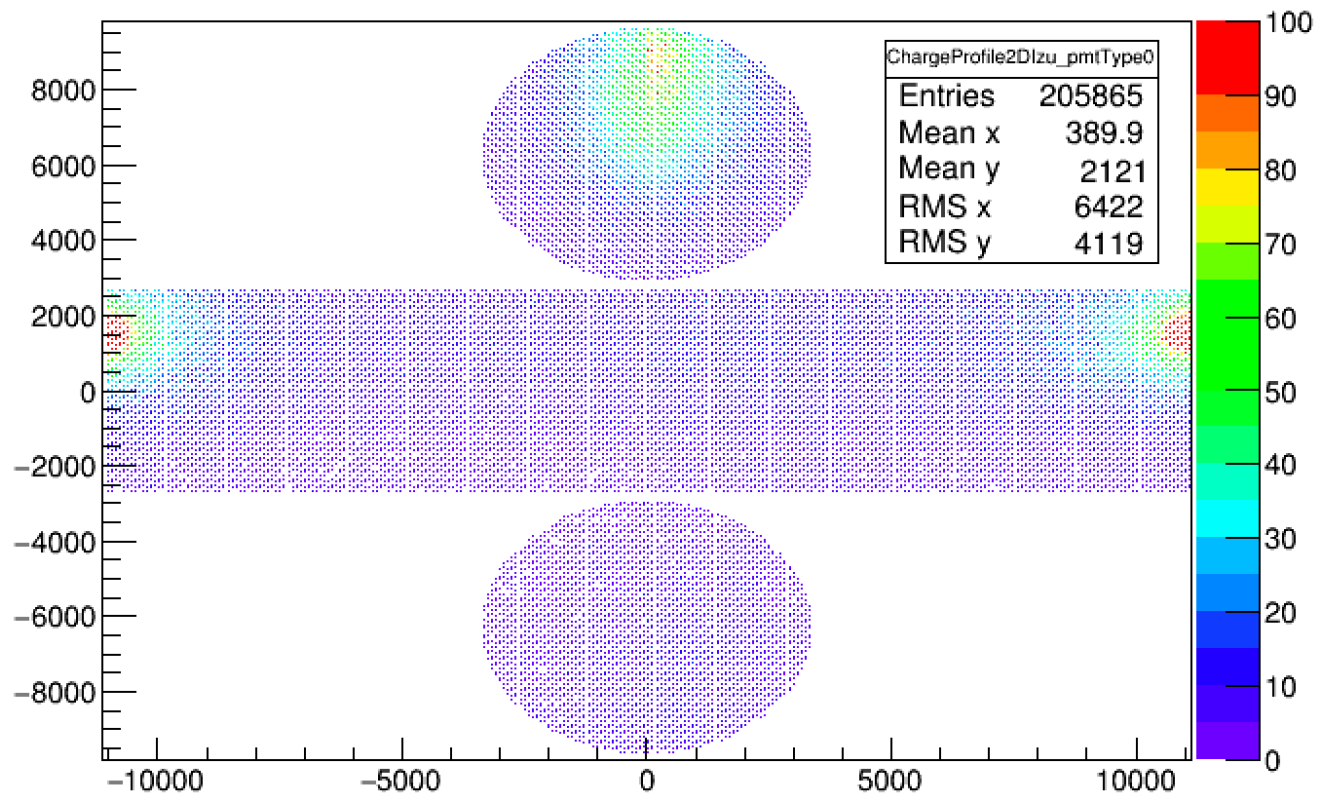


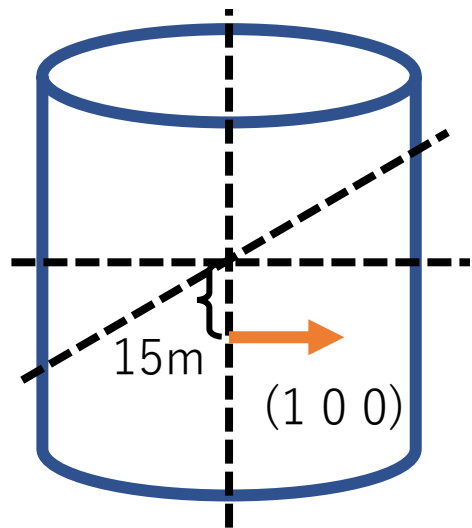


```

193 /mygen/generator laser
194 /gps/particle opticalphoton
195 /gps/energy 3.18 eV
196 /gps/direction 1 0 0
197 /gps/position 0 0 15.1 m
198 /gps/number 10000
199 # /gps/ang/type iso
200 # /gps/ang/mintheta 0 deg
201 # /gps/ang/maxtheta 180 deg
202 # /gps/ang/minphi 0 deg
203 # /gps/ang/maxphi 360 deg
204 /gps/verbose 0

```





```

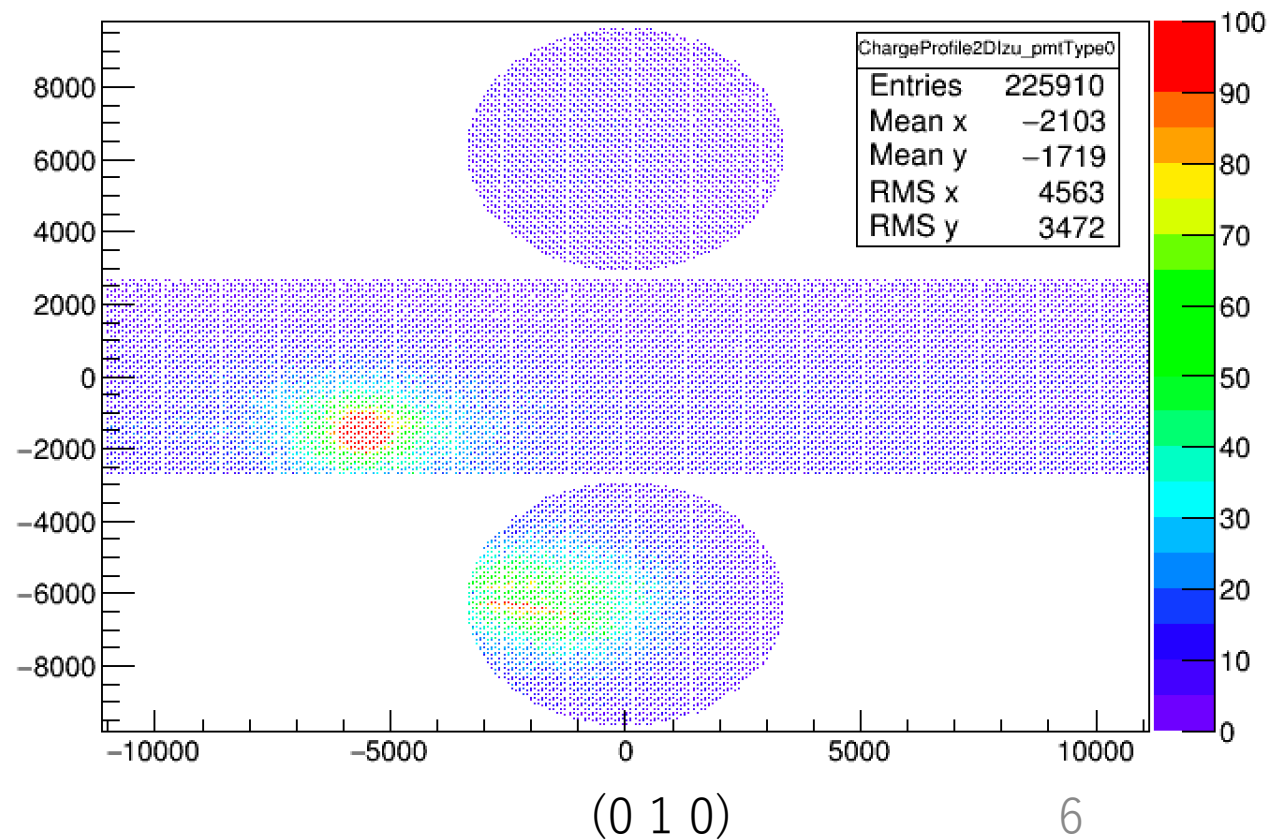
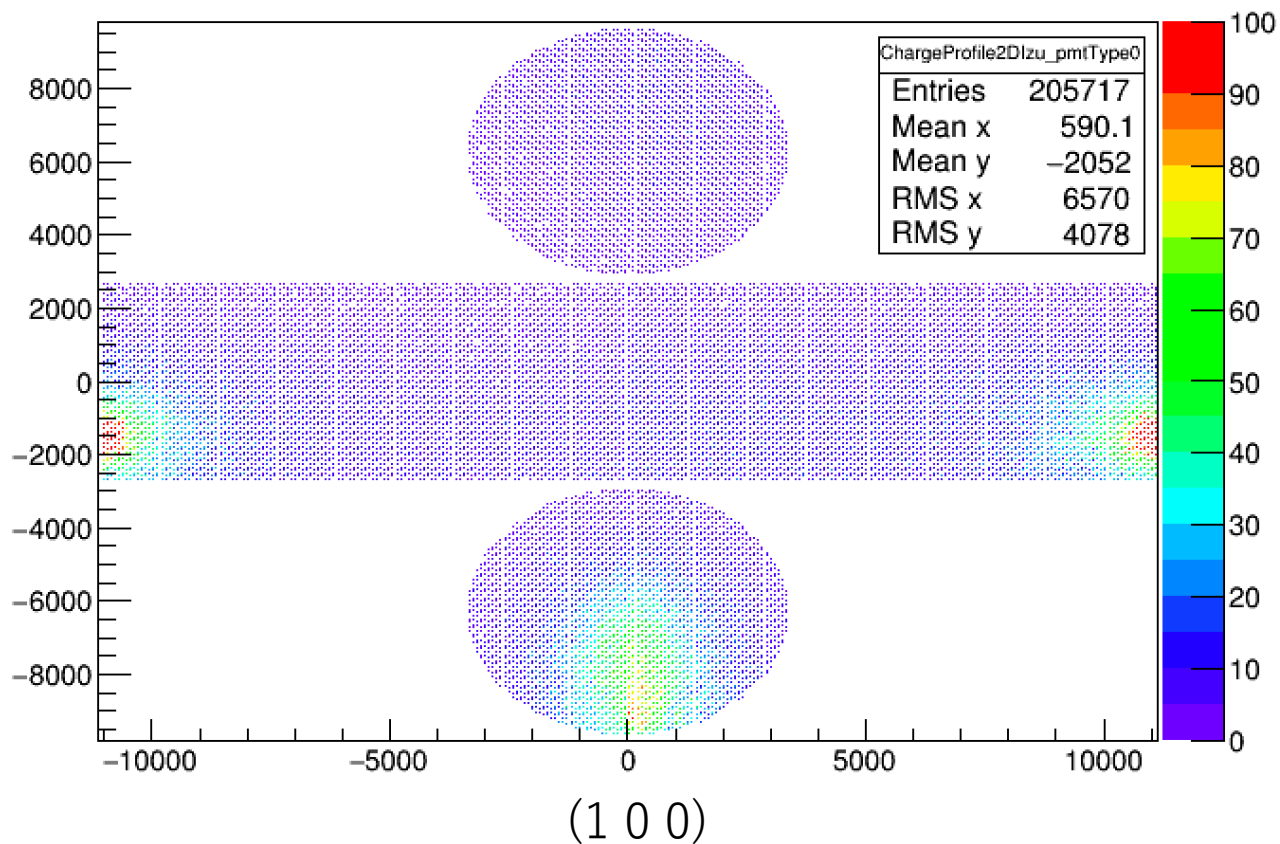
193 /mygen/generator laser
194 /gps/particle opticalphoton
195 /gps/energy 3.18 eV
196 /gps/direction 1 0 0
197 /gps/position 0 0 -15 m
198 /gps/number 10000
199 # /gps/ang/type iso
200 # /gps/ang/mintheta 0 deg
201 # /gps/ang/maxtheta 180 deg
202 # /gps/ang/minphi 0 deg
203 # /gps/ang/maxphi 360 deg
204 /gps/verbose 0

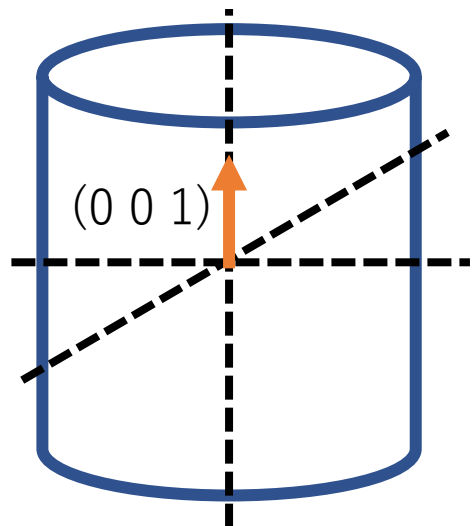
```

```

193 /mygen/generator laser
194 /gps/particle opticalphoton
195 /gps/energy 3.18 eV
196 /gps/direction 0 1 0
197 /gps/position 0 0 -15 m
198 /gps/number 10000
199 # /gps/ang/type iso
200 # /gps/ang/mintheta 0 deg
201 # /gps/ang/maxtheta 180 deg
202 # /gps/ang/minphi 0 deg
203 # /gps/ang/maxphi 360 deg
204 /gps/verbose 0

```

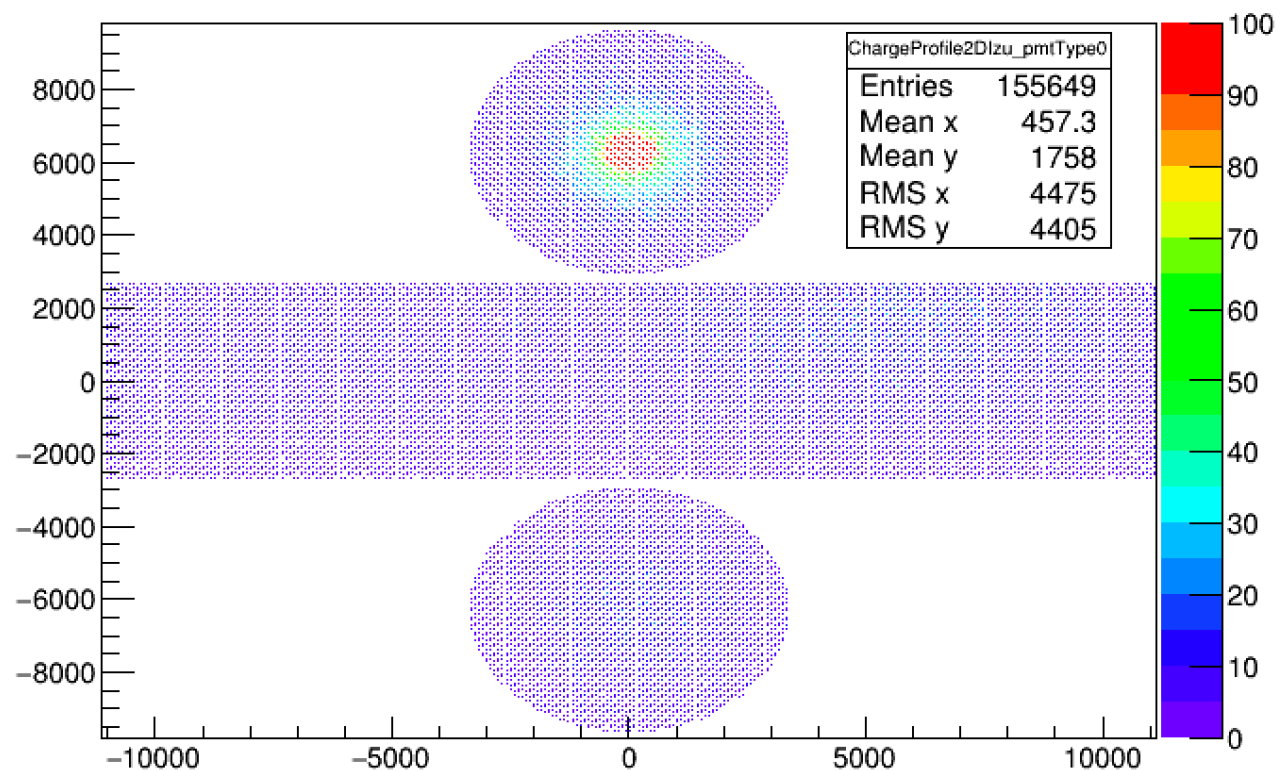


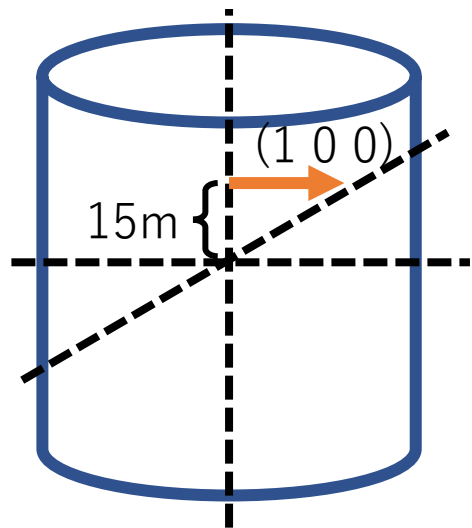


```

193 /mygen/generator laser
194 /gps/particle opticalphoton
195 /gps/energy 3.18 eV
196 /gps/direction 0 0 1
197 /gps/position 0 0 0 m
198 /gps/number 10000
199 # /gps/ang/type iso
200 # /gps/ang/mintheta 0 deg
201 # /gps/ang/maxtheta 180 deg
202 # /gps/ang/minphi 0 deg
203 # /gps/ang/maxphi 360 deg
204 /gps/verbose 0

```





```

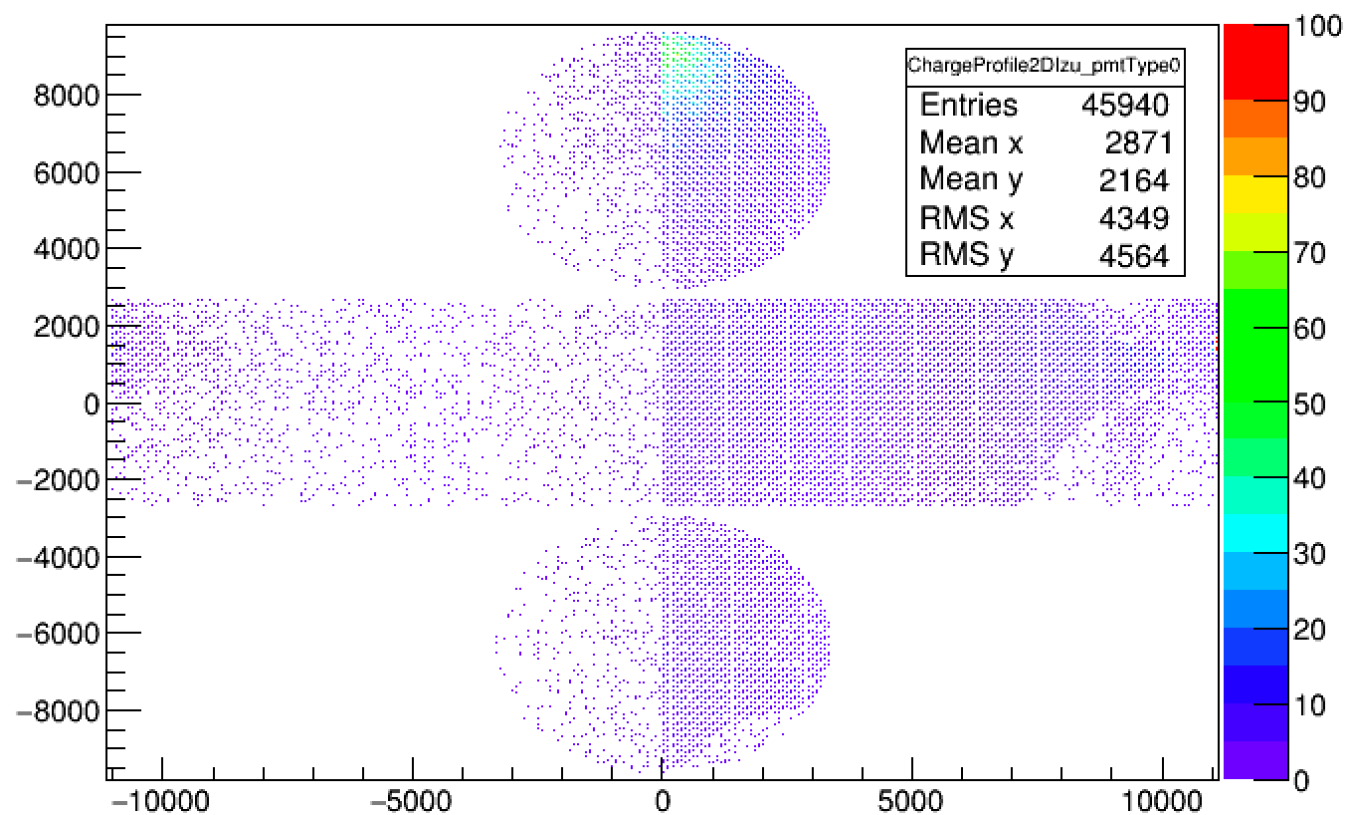
193 /mygen/generator laser
194 /gps/particle opticalphoton
195 /gps/energy 3.18 eV
196 /gps/direction 1 0 0
197 /gps/position 0 0 15 m
198 /gps/number 10000
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202 # /gps/ang/minphi 0 deg
203 # /gps/ang/maxphi 360 deg
204 /gps/verbose 0

```

```

1 # Set tuning parameters
2 /WCSim/tuning/abwff 1.30
3 /WCSim/tuning/rgcff 0.32
4 /WCSim/tuning/rayff 30.0
5 /WCSim/tuning/bsrff 2.5
6 /WCSim/tuning/mieff 0.0
7
8 # Parameters to set up Top Veto - jl145
9 # Set to "1" to turn on top veto.
10 /WCSim/tuning/topveto 0
11 # Set top veto PMT spacing in cm.
12 /WCSim/tuning/tvspacing 100
13
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```



Backup

CAENDigitizer User & Reference Manual

https://www.npl.washington.edu/TRIMS/sites/sand.npl.washington.edu/TRIMS/files/manuals-documentation/CAENDigitizer_SW_User_Manual_rel.5.pdf

Synopsis

```
CAEN_DGTZ_ErrorCode CAENDGTZ_API
CAEN_DGTZ_OpenDigitizer (CAEN_DGTZ_ConnectionType LinkType,
                        int LinkNum,
                        int ConetNode,
                        uint32_t VMEBaseAddress,
                        int *handle
                        );

typedef enum {
    CAEN_DGTZ_USB = 0, // USB (direct or V1718->VME)
    CAEN_DGTZ_PCI_OpticalLink = 1, // PCI-A2818 (direct or V2718->VME)
    CAEN_DGTZ_PCIE_OpticalLink = 2, // PCIE-A3818 (direct or V2718->VME)
    CAEN_DGTZ_PCIE_EmbeddedDigitizer = 3, // future development
} CAEN_DGTZ_ConnectionType;
```

Arguments

Name	Description
LinkType	Indicates the physical communication channel. It can be CAEN_DGTZ_USB (either direct connection or VME through V1718), CAEN_DGTZ_PCI_OpticalLink (A2818 -> Optical Link, either direct connection or VME through V2718) or CAEN_DGTZ_PCIE_OpticalLink (same as A2818 but using A3818).
LinkNum	Link number: in case of USB, the link numbers are assigned by the PC when you connect the cable to the device; it is 0 for the first device, 1 for the second and so on. There is not a fixed correspondence between the USB port and the link number. For the CONET, the link number indicates which link of A2818 or A3818 is used; Link index start from 0 (1 st Optical link port in the 1 st slot used). It is not known a priori which is the first slot used (it depends on the motherboard of the PC used.). IMPORTANT NOTE: if A2818 and A3818 are installed together, the A2818 have lower index assigned.
ConetNode	The CONET node identifies which device in the Daisy chain is being addressed. The node is 0 for the first device in the chain, 1 for the second and so on. In case of USB, <i>ConetNode</i> must be 0.
VMEBaseAddress	VME Base Address of the board (rotary switches setting) expressed as a 32-bit number. This argument is used only for the VME models accessed through the VME bus and MUST BE 0 in all other cases.
*handle	Pointer to the handler returned by the open function


```

cm_set_watchdog_params(FALSE, 0);

// setbuf(stdout, NULL);
// setbuf(stderr, NULL);
printf("begin of Init\n");
/* Book Setting space */
DT5724_CONFIG_SETTINGS_STR(dt5724_config_settings_str);

sprintf(set_str, "/Equipment/V1743/Settings/DTV1743");
status = db_create_record(hDB, 0, set_str, strcomb(dt5724_config_settings_str));
status = db_find_key(hDB, 0, set_str, &hSet[0]);
if (status != DB_SUCCESS) cm_msg(MINFO, "FE", "Key %s not found", set_str);

/* Enable hot-link on settings/ of the equipment */
size = sizeof(DT5724_CONFIG_SETTINGS);
if ((status = db_open_record(hDB, hSet[0], &(tsvc[0]), size, MODE_READ, seq_callback, NULL)) != DB_SUCCESS)
    return status;

// Open connection to digitizer
CAEN_DGTZ_ErrorCode ret;
//ret = CAEN_DGTZ_OpenDigitizer(CAEN_DGTZ_USB, 0 /*link num*/, 0, 0 /*base addr*/, &handle);
ret = CAEN_DGTZ_OpenDigitizer(CAEN_DGTZ_USB, 2 /*link num*/, 0, 0x81110000, &handle); //modified by sashima on 20200909

if(ret){
    cm_msg(MERROR, "frontend_init", "cannot open digitizer");
    printf("Error code %i\n", ret); //modified by izumi 6/26/2020
    return 0;
}else{
    cm_msg(MINFO, "frontend_init", "successfully opened digitizer");
}

ret = CAEN_DGTZ_GetInfo(handle, &BoardInfo);
if (ret) {
    cm_msg(MERROR, "frontend_init", "error getting info");
}

cm_msg(MINFO, "frontend_init", "Connected to CAEN Digitizer Model %s", BoardInfo.ModelName);
printf("ROC FPGA Release is %s\n", BoardInfo.ROC_FirmwareRel);
printf("AMC FPGA Release is %s\n", BoardInfo.AMC_FirmwareRel);

// If a run is going, start the digitizer running
int state = 0;
size = sizeof(state);
db_get_value(hDB, 0, "/Runinfo/State", &state, &size, TID_INT, FALSE);

if (state == STATE_RUNNING)
    initialize_for_run();

```



```

};

void destroy( GtkWidget *widget, gpointer data );
void readChannel( GtkWidget *widget, gpointer data );
void getChannelInfo( GtkWidget *widget, gpointer data );
void setVoltage( GtkWidget *widget, gpointer data );
void setCurrent( GtkWidget *widget, gpointer data );
void powerChannel( GtkWidget *widget, gpointer data );
gint timeout_callback( gpointer data );

int main(int argc, void *argv[]) {

    CVBoardTypes  VMEBoard = cvV1718;
    short         Link = 0;
    short         Device = 2; //modified by sashima on 20200909
    int32_t       BHandle;

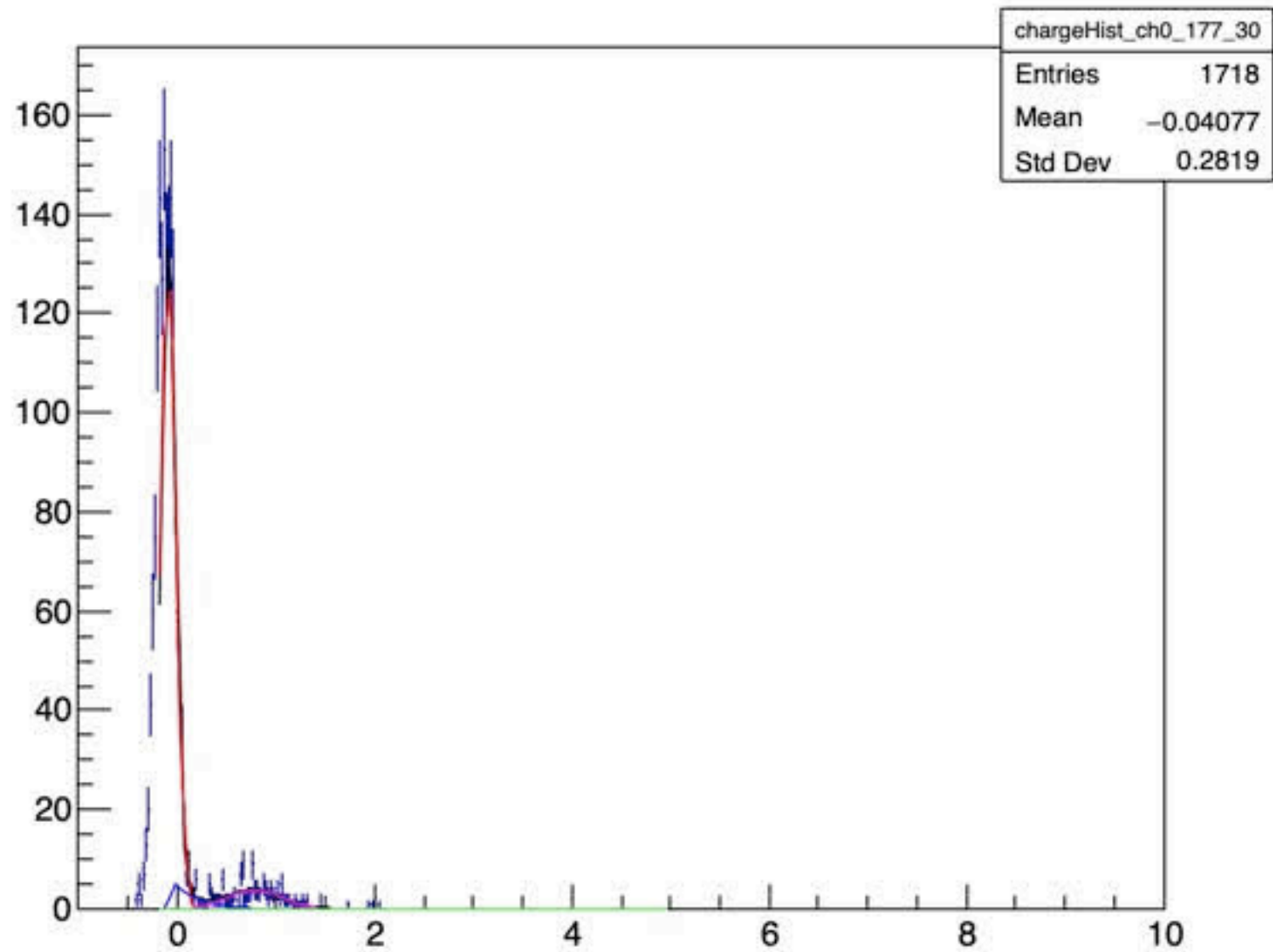
    // Initialize the Board

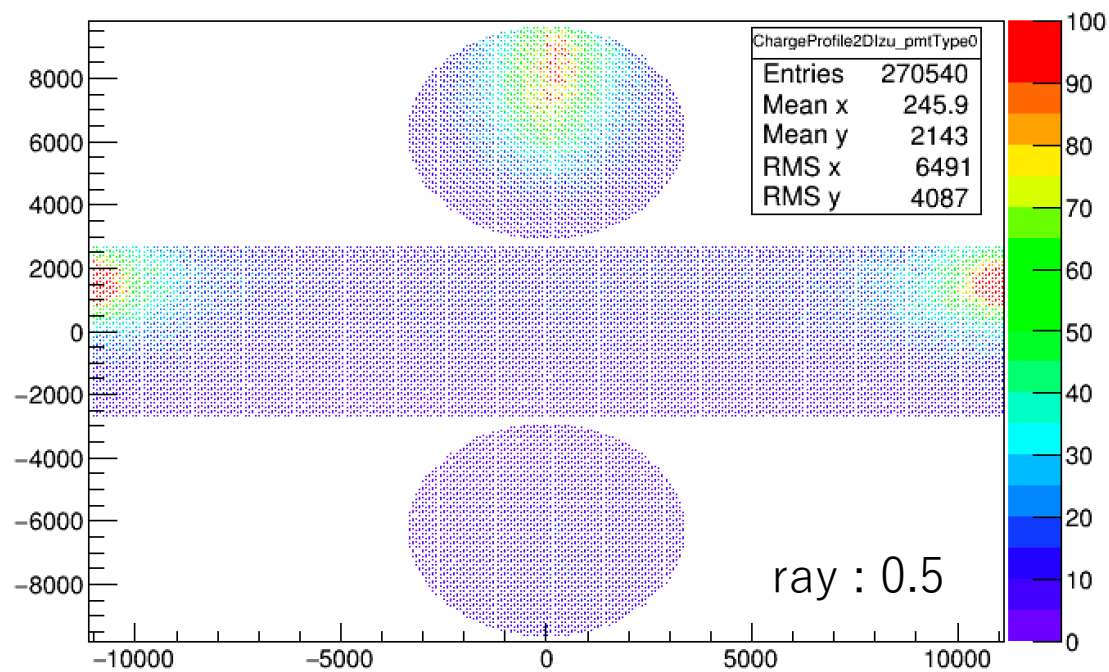
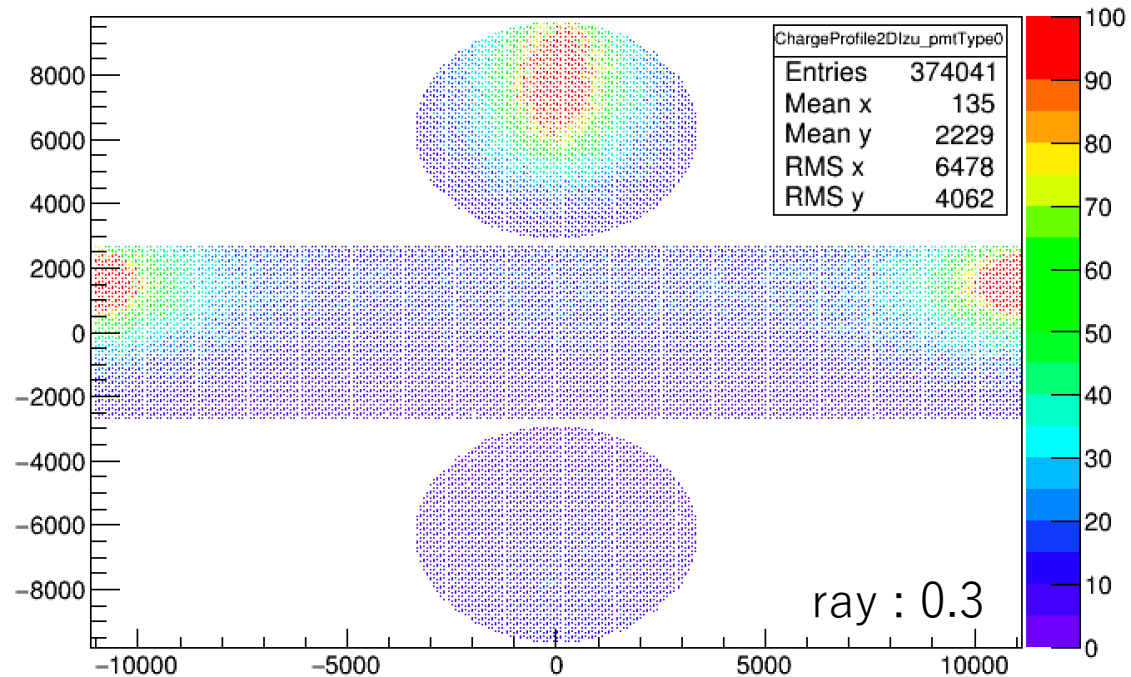
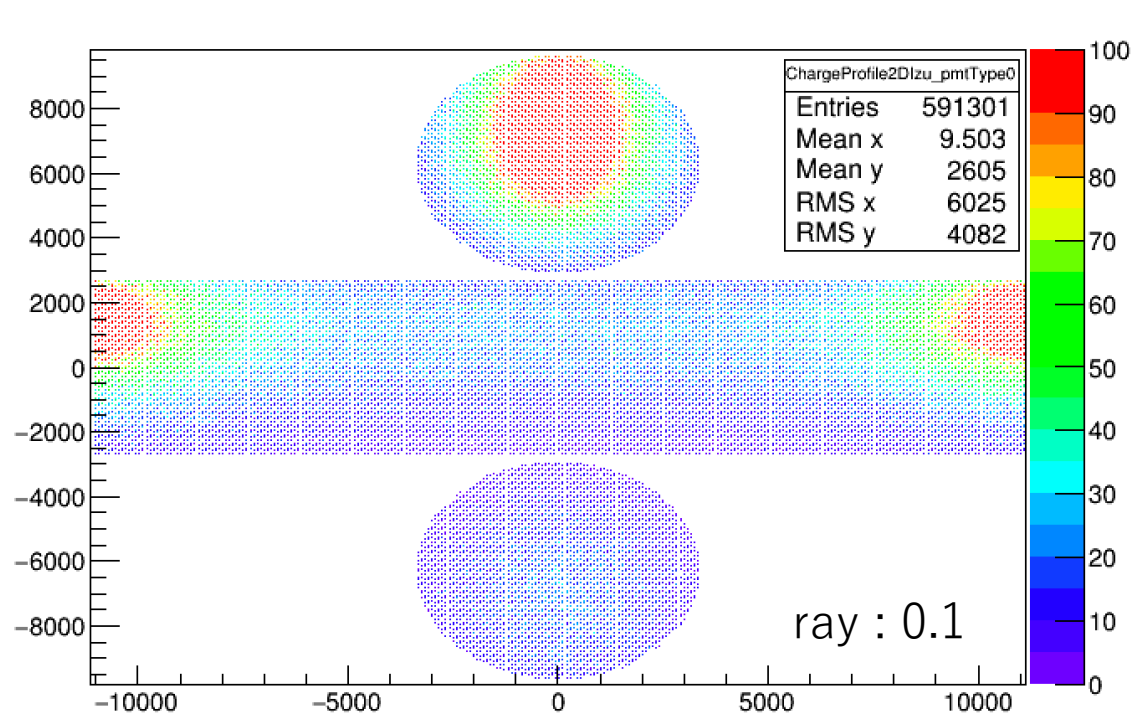
    if( CAENVME_Init(VMEBoard, Link, Device, &BHandle) != cvSuccess ) {
        printf("\n\n Error opening the device\n");
        exit(1);
    }

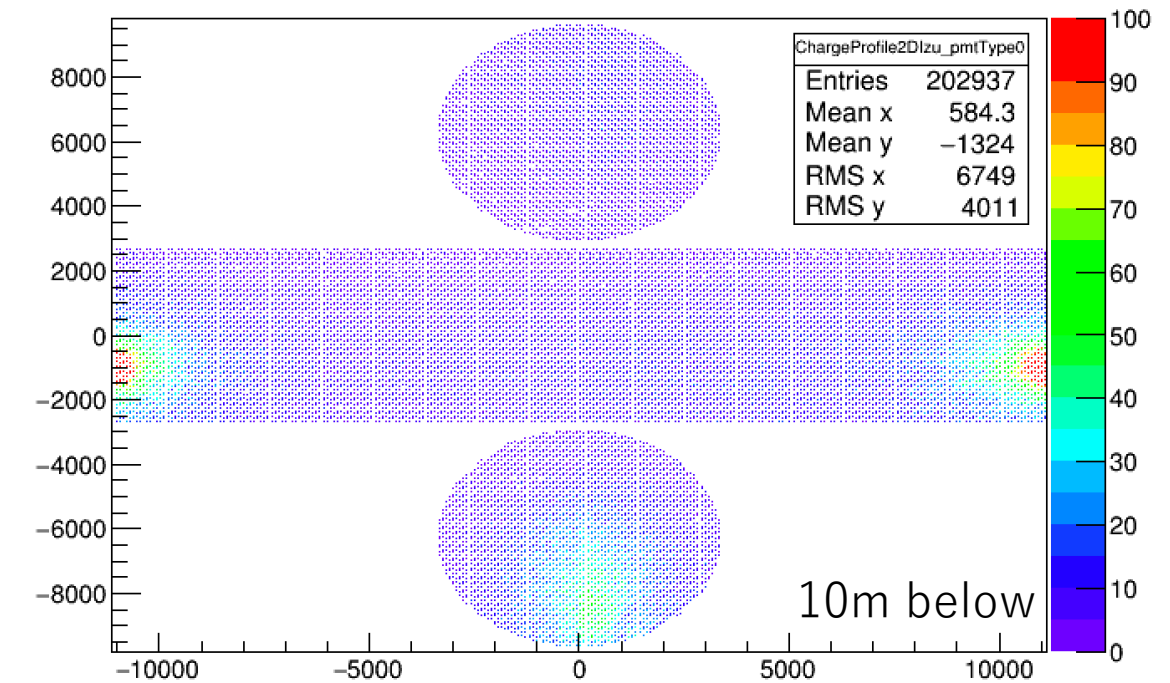
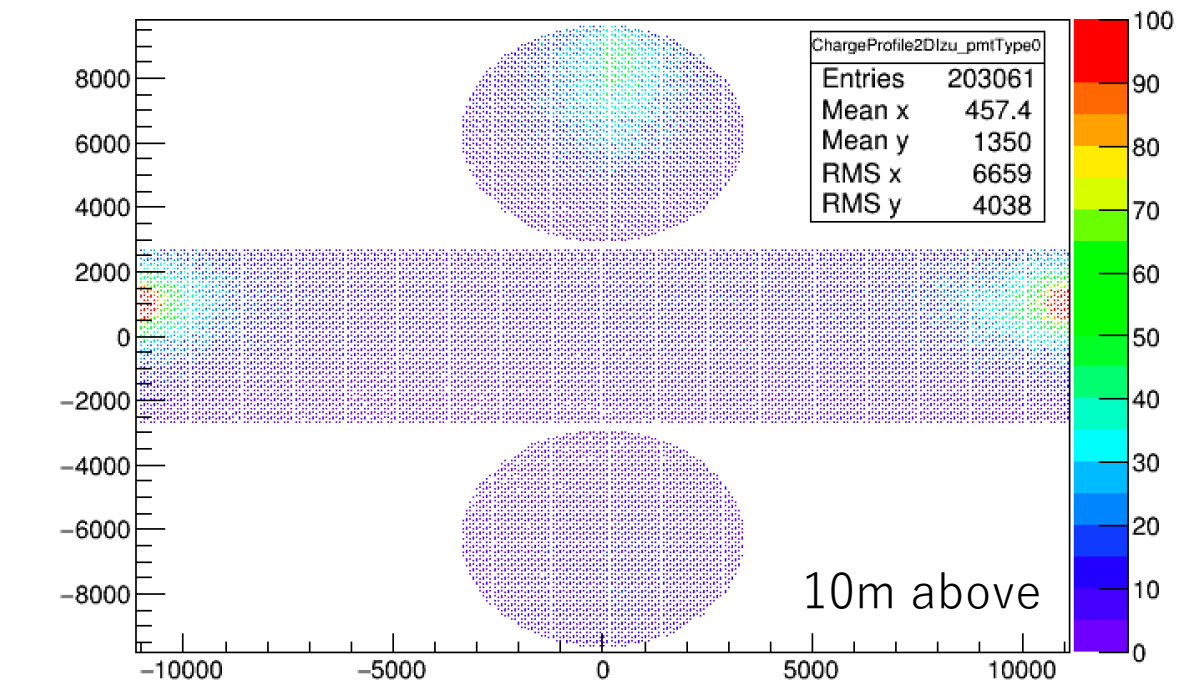
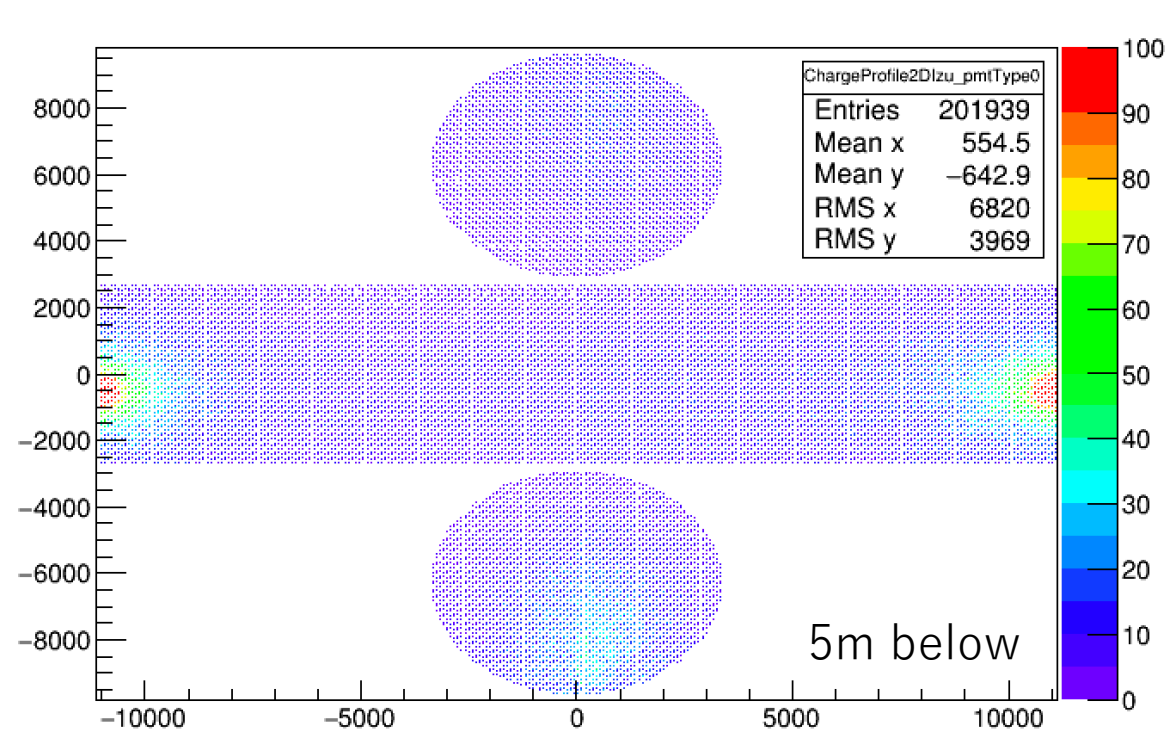
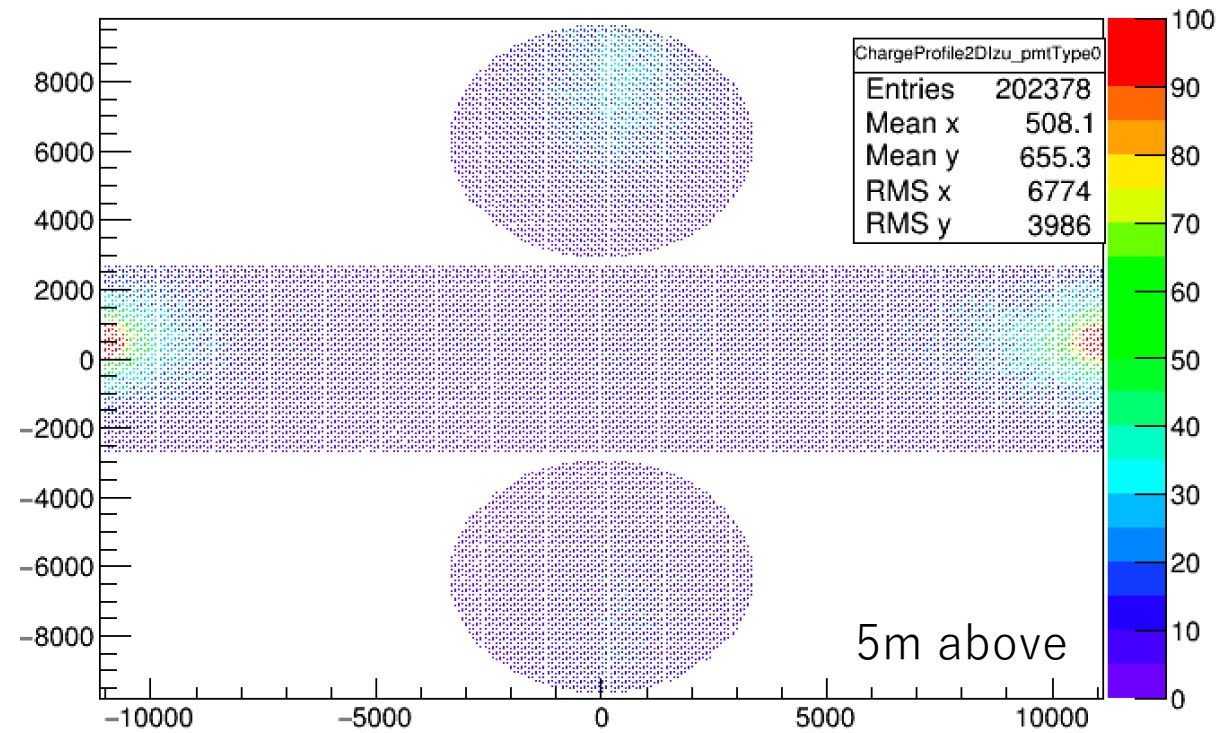
    uint32_t data = 0;
    CVAddressModifier am = cvA32_U_DATA;
    CVDataWidth dtsize = cvD16;
    CAENVME_ReadCycle(BHandle, 0x60000080, &data, am, dtsize);
    printf("test %d\n",data);

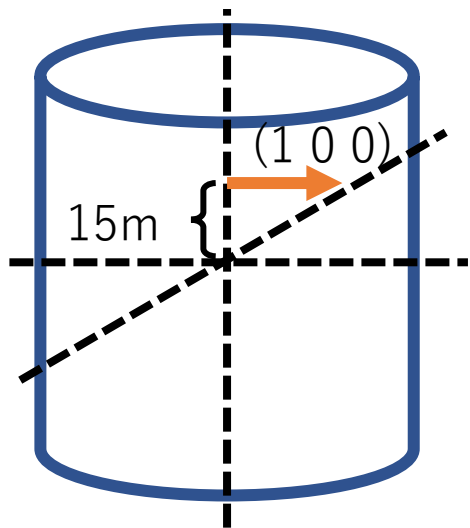
    //Make an instance of the data that will be passed around
    struct myData dataStruct;

```





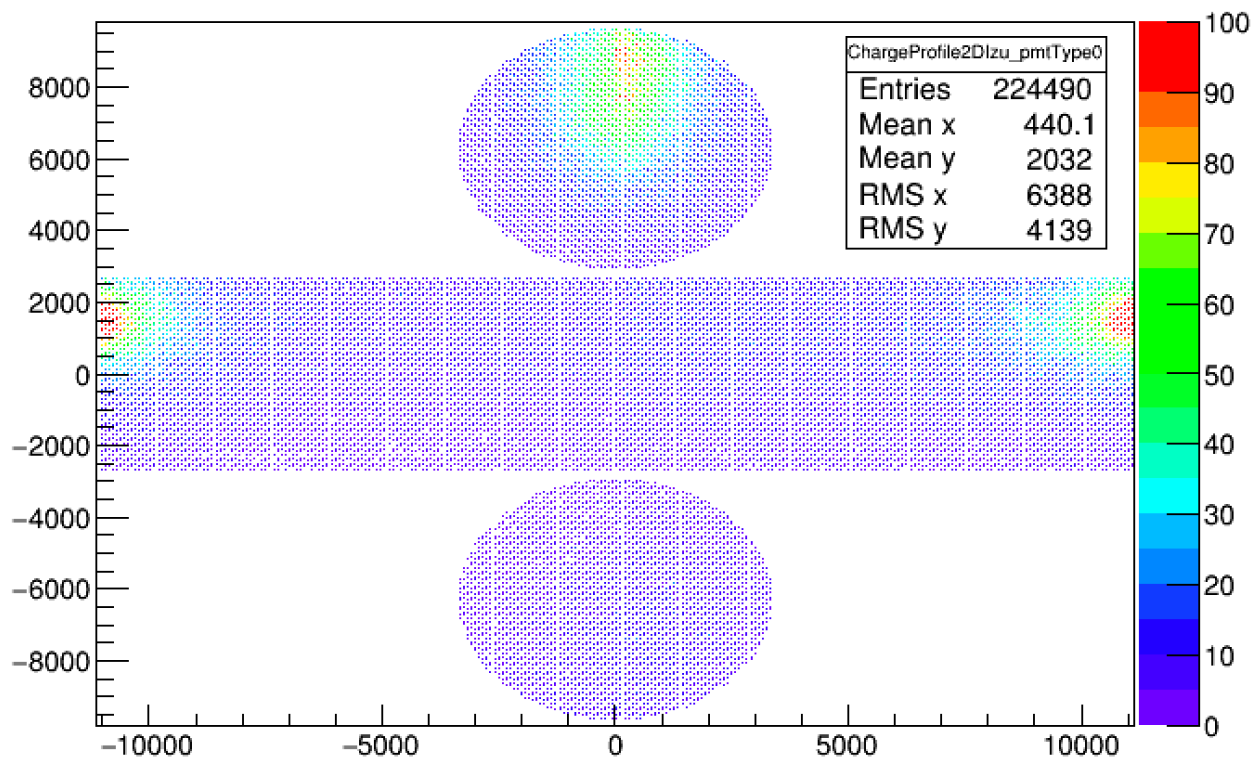


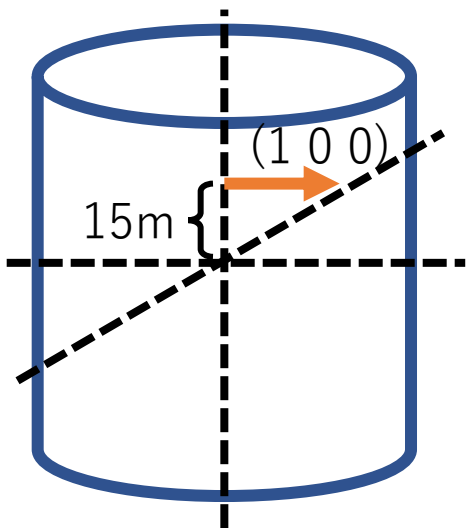
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ray : default , abw : 1000





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