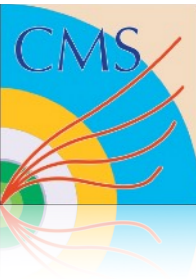


Writing a calibration



... measure occupancy for a fixed range of thresholds , plot data, extract pedestal

- Skeleton code provided in the [daqSchool2021](#) branch of the repository :
 - complete top level source provided - but have a look at the code and take note of the steps required before executing *any* calibrations
 - skeleton tool provided (up-to you to fill in the blanks) : inject and change the threshold to until you see a hit ; configure generic tool to inject in your preferred pattern;
 - skeleton DQM plotter utility provided (up-to you to fill in the blanks) : plot a 2D histogram (x = channel #, y = threshold, z = occupancy) and use it to estimate the pedestal

src/RD53simple_scurve.cc

```
Tool cTool;
std::stringstream outp;
cTool.InitializeHw(cHWFile, outp);
cTool.InitializeSettings(cHWFile, outp);
LOG(INFO) << outp.str();
outp.str("");
cTool.ConfigureHw();
cTool.CreateResultDirectory(cDirectory);
cTool.InitResultFile("RD53SimpleSCurveResult");

Timer t;
t.start();

// EDIT - begin //
// Create here your calibration, inherit from Tool run the calibration
RD53SimpleSCurve theRD53SimpleSCurve;
theRD53SimpleSCurve.Inherit(&cTool);
theRD53SimpleSCurve.Initialise();
theRD53SimpleSCurve.runRD53SimpleSCurve();
// EDIT - end //

cTool.WriteRootFile();
cTool.CloseResultFile();
cTool.Destroy();

t.stop();
t.show("Time to Run Calibration example");
```

top level source to produce executable

tools/RD53SimpleSCurve.*

```
using namespace Ph2_HwDescription;
using namespace Ph2_HwInterface;
using namespace Ph2_System;

class RD53SimpleSCurve : public Tool
{
public:
    RD53SimpleSCurve();
    ~RD53SimpleSCurve();

    void Initialise(void);
    void runRD53SimpleSCurve(void);
    void writeObjects(void);

    // State machine
    void Running() override;
    void Stop(void) override;

private:
    size_t fRowStart;
    size_t fRowStop;
    size_t fColStart;
    size_t fColStop;
    uint32_t fEventsPerPoint;
```

user specific tool

DQMUtils/RD53DQMHistogramSimpleSCurve.*

```
class RD53DQMHistogramSimpleSCurve : public DQMHistogramBase
{
public:
    /*!
     * constructor
     */
    RD53DQMHistogramSimpleSCurve();

    /*!
     * destructor
     */
    ~RD53DQMHistogramSimpleSCurve();
```

DQM plotter tool