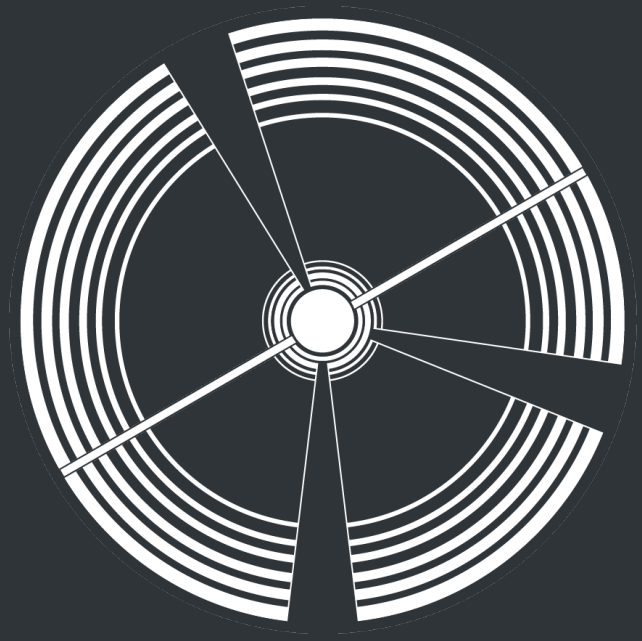


HistoMaster

Daniel Foulds-Holt, **Peter** DeRosa, **Nicky** Evans

Why re-write ROOT?

- ROOT is complicated to use. It is often said that there is a steep learning curve before you truly can use it.

```
[root [0] TFile *_file0 = TFile::Open("HIST_CONC2.root")
 (TFile *) 0x7fb3c9767950
[root [1] _file0->ls()
 TFile**         HIST_CONC2.root
  TFile*         HIST_CONC2.root
   KEY: TH1D     dt_Hist;1
   KEY: TH1D     ratio_Hist;1
   KEY: TH1D     A_Peaks_Hist_OUT;1
   KEY: TH1D     B_Peaks_Hist_OUT;1
   KEY: TH1D     A_Peaks_Hist_IN;1
   KEY: TH1D     B_Peaks_Hist_IN;1
   KEY: TH1D     dtdt_Hist;1
[root [2] dt_Hist->Draw()
```

- ROOT is a large, difficult to install, and bloated program. Installing ROOT is such a large effort that, for most people, it isn’t worth it.

- ROOT is not user oriented it is predominantly terminal based.

What can we do better?

- **INSTALLATION** – It is important that the program is largely stand alone with an extremely easy and quick install process.
- **SMALL** – No software is too large but keeping both the HistoMaster program and file size small is important.
- **FAST** – We need the code to run quickly.
- **SIMPLE** – The interface needs to be simple enough that, to a first order, you can use it without a guide.

What already exists?

Progress has been made in opening and reading ROOT files with 3 file reading classed completed.

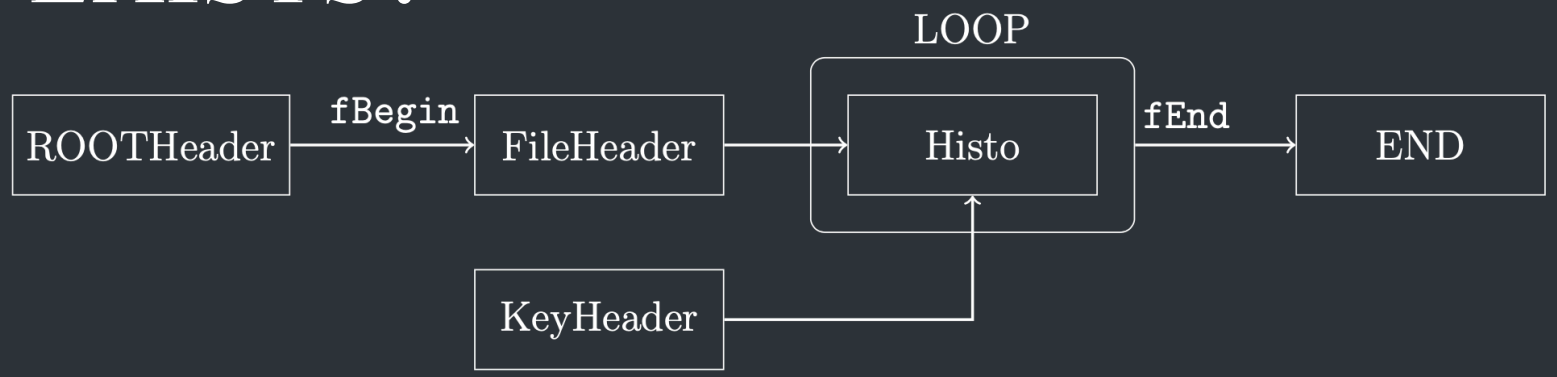


Figure 1: A diagram showing the data flow as HistoMaster opens a ROOT file.

The ROOTHeader, FileHeader, and KeyHeader classes are able to read all the metadata from a ROOT file. This means we can successfully locate and save the histogram data bytes into the Histo class.

Infrastructure for the handling of histogram data has been started.

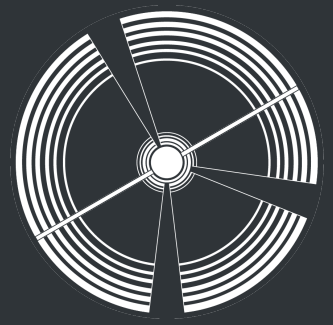
What needs to be done?

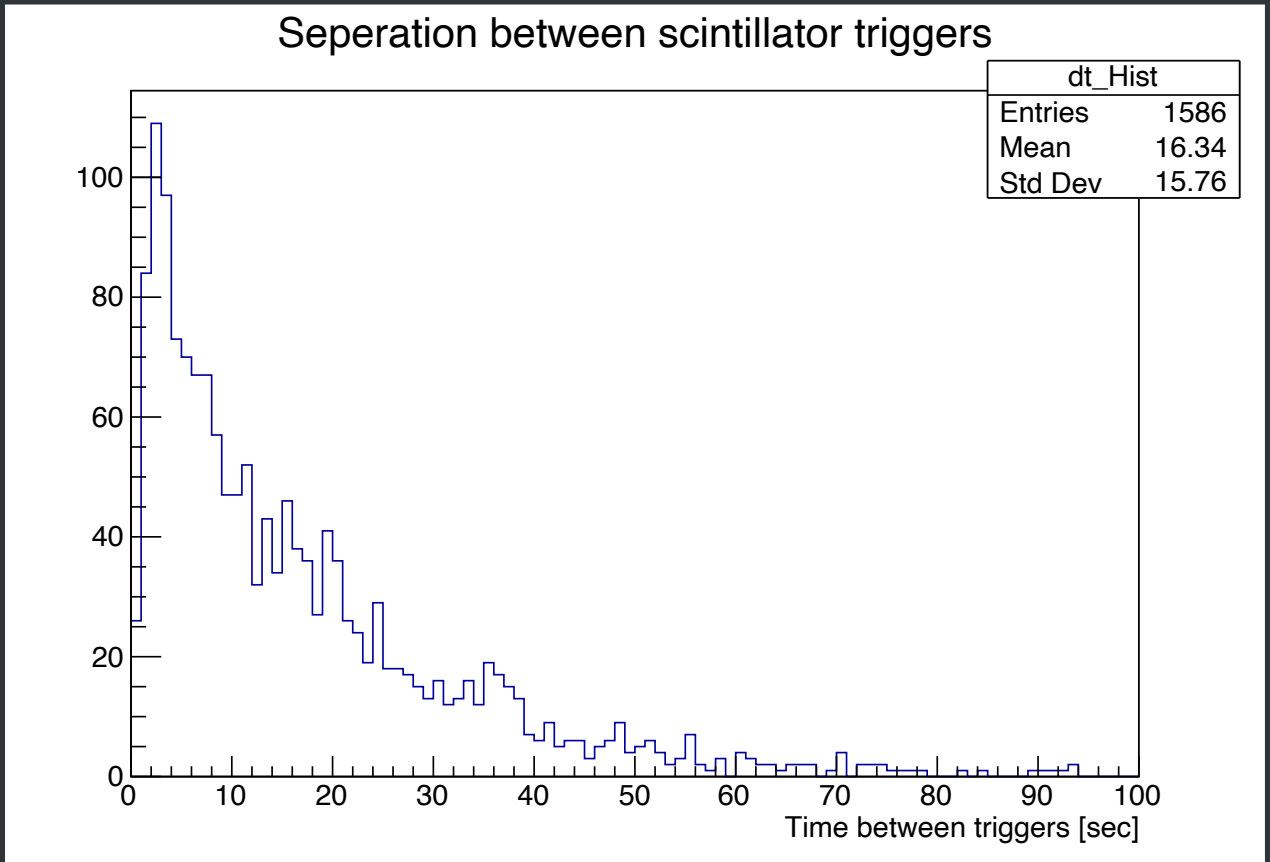
- **GUI** – A GUI needs to allow for easy viewing and analysis of the histograms, but also to produce publication quality image output.
- **DECOMPRESSION** – ROOT files are compressed using a variety of compression algorithms. Mostly they use ZLIB. While we can access the compressed data, we need to be able to decompress it also.
- **DATA HANDLING** – In order to make HistoMaster useful, the user must be able to manipulate and fit the data in a histogram.

In short – a lot…

Can I help? I don't know code!

YES! – The best way to learn code is to try to solve a problem. Textbooks and YouTube videos can never match the experience of solving a hard but interesting problem like HistoMaster!





Help us make graphs like this a thing of the past!