

Keep examples **script based** not functions, this avoids scope issues and explanations keeping it beginner friendly.

Dont explicitly teach TFiles or TBrowser

Assume no C++ knowledge

Keep ALL histograms N!=X so that bin commands are explicit

Key learning objectives:

Define a histogram

Inspect a TTree

Use TSpectrum

Draw histograms overlain

Subtract histograms

Integrate histograms

Fit histograms

Fit TGraphs

Fit with L options

Histogram Commands To Include:

Fill

FillRandom

Integral

IntegralAndError

Draw()

Draw("same")

GetMaximumBin()

FindBin

GetBinContent

GetBinWidth

GetBinCenter

GetXaxis()

GetXaxis()->SetRange

GetXaxis()->SetRangeUser

Add

Sumw2

Rebin

SetLineColor

Intro Slides

- Demo interpreter c++ loop etc (welcome to follow)
- Demo fn loading (welcome to follow)
- TH1 Slides
- Demo TH1 creation and drawing
- Demo SetLineColor or Width (Highlight tab autocomplete)
- Show TCanvas editor, encourage exploration (provide partial script)

Lesson 1: Basics, Histograms, FitPanel, TSpectrum

-A TH1 (not 1-1 binning)

- Fit panel fitting
- Gausn (bin width!!)
- Integral and error
- TSpectrum
- Add Sumw2

Lesson 2: TTrees, TTree::Draw, Scripted Fitting

- ls
- print
- scan
- scan variable
- show
- TTree Draw commands only (Say viewer exists but don't teach?)
- Splitting channels BGO veto
- Scripted fitting

Extra Lessons 3: TTree Sorting Script and Lifetime Fitting

- TTree to TH2 sorting script
- Gating with GUI and code
- Fitting tau (with background)
- Fitting with option L
- Extra exercise : Fit the fancy convolved function

Extra Lessons:

- Fit TGraphErrors of efficiency (getting chi squared)
- Eval TF1
- Make and draw fit the Error Band
- Doppler Correction with an S3

Rejected Exercises:

- Making Efficiency TGraph from 152Eu Spectrum
- Scripted fitting of complex efficiency using FixParamater etc
- YY matrix filling and Time Random subtraction