Recent GUI Developments in ROOT

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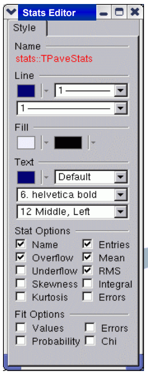
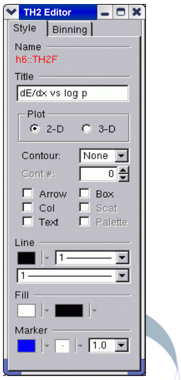
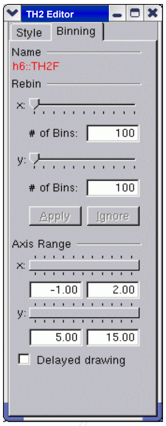
The ROOT framework offers considerable benefits for developing a fully cross platform object-oriented user interface. Two sets of classes are presented: the Object Editors and the Style Manager.

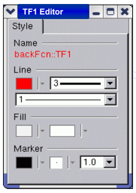
Object Editors

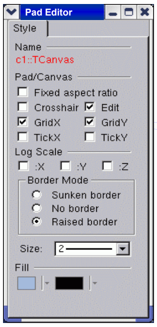
The ROOT graphics editor is split into discrete units of so-called object editors. Any object editor provides an object specific user interface that shows up when the corresponding object is selected. This interface design is built with a capacity for growth and can be extended easily by user-defined object editors.

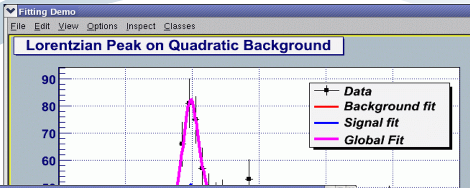

Stats Editor
Style
Name: stats::TPaveStats
Line: 1; 1
Fill
Text: Default; 6. helvetica bold; 12 Middle, Left
Stat Options: ☑ Name ☑ Entries ☑ Overflow ☑ Mean ☐ Underflow ☑ RMS ☐ Skewness ☐ Integral ☐ Kurtosis ☐ Errors
Fit Options: ☐ Values ☐ Errors ☐ Probability ☐ Chi

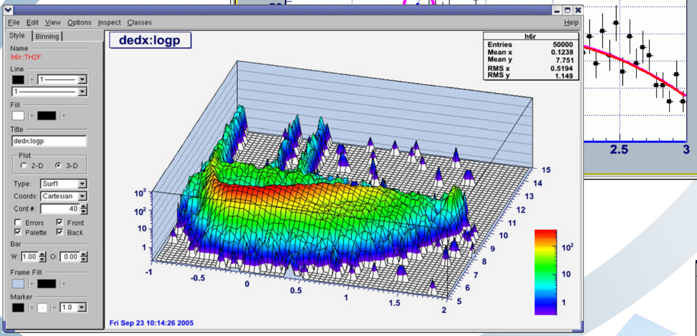

TH2 Editor
Style | Binning
Name: h6::TH2F
Title: dE/dx vs log p
Plot: ● 2-D ○ 3-D
Contour: None
Cont #: 0
☐ Arrow ☐ Box ☐ Col ☐ Scat ☐ Text ☐ Palette
Line: 1; 1
Fill
Marker: 1.0


TH2 Editor
Style | Binning
Name: h6::TH2F
Rebin
x: # of Bins: 100
y: # of Bins: 100
Apply | Ignore
Axis Range
x: -1.00 2.00
y: 5.00 15.00
☐ Delayed drawing


TF1 Editor
Style
Name: backFcn::TF1
Line: 3; 1
Fill
Marker: 1.0


Pad Editor
Style
Name: c1::TCanvas
Pad/Canvas: ☐ Fixed aspect ratio ☐ Crosshair ☑ Edit ☑ GridX ☑ GridY ☐ TickX ☐ TickY
Log Scale: ☐ :X ☐ :Y ☐ :Z
Border Mode: ○ Sunken border ○ No border ● Raised border
Size: 2
Fill

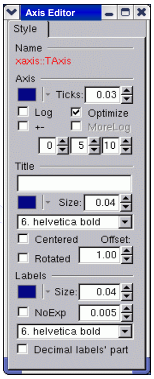

Fitting Demo
Lorentzian Peak on Quadratic Background

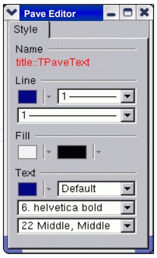

Style | Binning
Name: h6r::TH2F
Line: 1; 1
Fill
Title: dedx:logp
Plot: ○ 2-D ● 3-D
Type: Surf1
Coords: Cartesian
Cont #: 40
☐ Errors ☑ Front ☑ Palette ☑ Back
Bar W: 1.00 O: 0.00
Frame Fill
Marker: 1.0

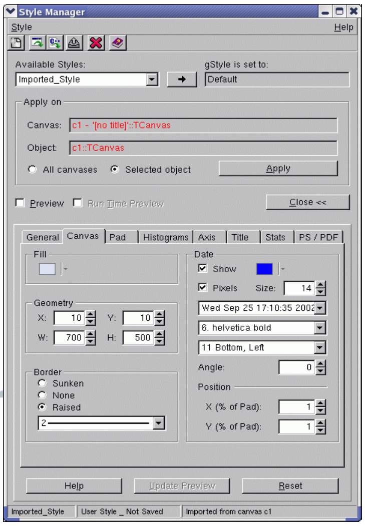
dedx:logp

h6r	
Entries	50000
Mean x	0.1238
Mean y	7.751
RMS x	0.5194
RMS y	1.149

Fri Sep 23 10:14:26 2005


Axis Editor
Style
Name: xaxis::TAxis
Axis: Ticks: 0.03; ☐ Log ☑ Optimize ☐ +- ☐ MoreLog; 0 5 10
Title: Size: 0.04; 6. helvetica bold; ☐ Centered Offset: ☐ Rotated 1.00
Labels: Size: 0.04; ☐ NoExp 0.005; 6. helvetica bold; ☐ Decimal labels' part


Pave Editor
Style
Name: title::TPaveText
Line: 1; 1
Fill
Text: Default; 6. helvetica bold; 22 Middle, Middle


Style Manager

Available Styles: Imported_Style
gStyle is set to: Default
Apply on
Canvas: c1 - '[no title]'::TCanvas
Object: c1::TCanvas
○ All canvases ● Selected object
Apply
☐ Preview ☐ Run Time Preview
Close <<
General | Canvas | Pad | Histograms | Axis | Title | Stats | PS / PDF
Fill
Geometry: X: 10 Y: 10 W: 700 H: 500
Border: ○ Sunken ○ None ● Raised; 2
Date: ☑ Show; ☑ Pixels Size: 14; Wed Sep 25 17:10:35 2002; 6. helvetica bold; 11 Bottom, Left
Angle: 0
Position: X (% of Pad): 1; Y (% of Pad): 1
Help | Update Preview | Reset
Imported_Style | User Style _ Not Saved | Imported from canvas c1

Import from a canvas
Import from a macro
Create a new style
Delete a style
Edit selected style
Export to a macro

```
TStyle *tmpStyle = new TStyle("Imported_Style", "Imported from canvas c1");
tmpStyle->SetNdivisions(510, "x");
tmpStyle->SetNdivisions(510, "y");
tmpStyle->SetFillColor(19);
tmpStyle->SetFillStyle(1001);
```

```
 tmpStyle->GetAttDate()->SetTextSize(14);
 tmpStyle->GetAttDate()->SetTextAngle(0);
 tmpStyle->GetAttDate()->SetTextAlign(11);
```

Style Manager

This new Graphical User Interface is created to manage different styles in a ROOT session. It allows users to import a style from a canvas or a macro, to select a style for editing, to export it in a C++ macro, to apply a currently selected style on a selected object in a canvas or on all canvases, to set it as the `gStyle`.

This interface is composed of two parts:
- the top level interface manages a list of all available styles for the current ROOT session and shows the currently selected one;
- the style editor deals with the settings of the currently selected style.

A preview of the selected canvas helps for precision work. It can be updated dynamically at run-time or by request to show how the edited style looks. All changes made in the style editor can be cancelled and the edited style can be restored to the last saved state in a macro.

For more information see: http://root.cern.ch
For any questions please use the address: rootdev@pcroot.cern.ch