Fit Panel

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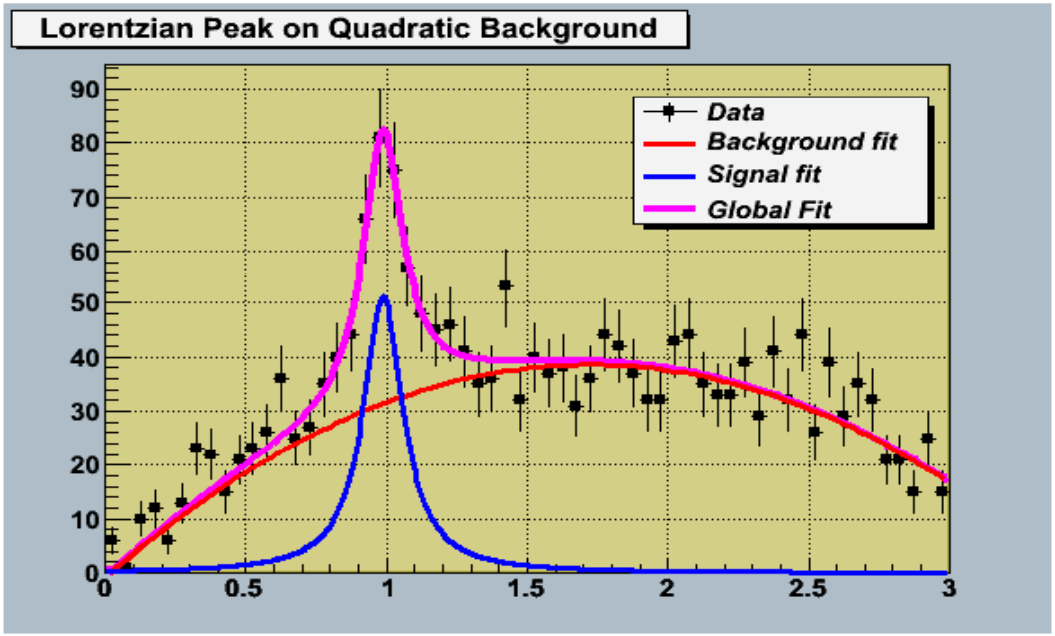
Fitting in ROOT

Fitting in ROOT is possible :

- Histograms (1D, 2D, 3D)
- Graphs (also 1D, 2D, 3D)
- Trees
- User defined data
- etc...



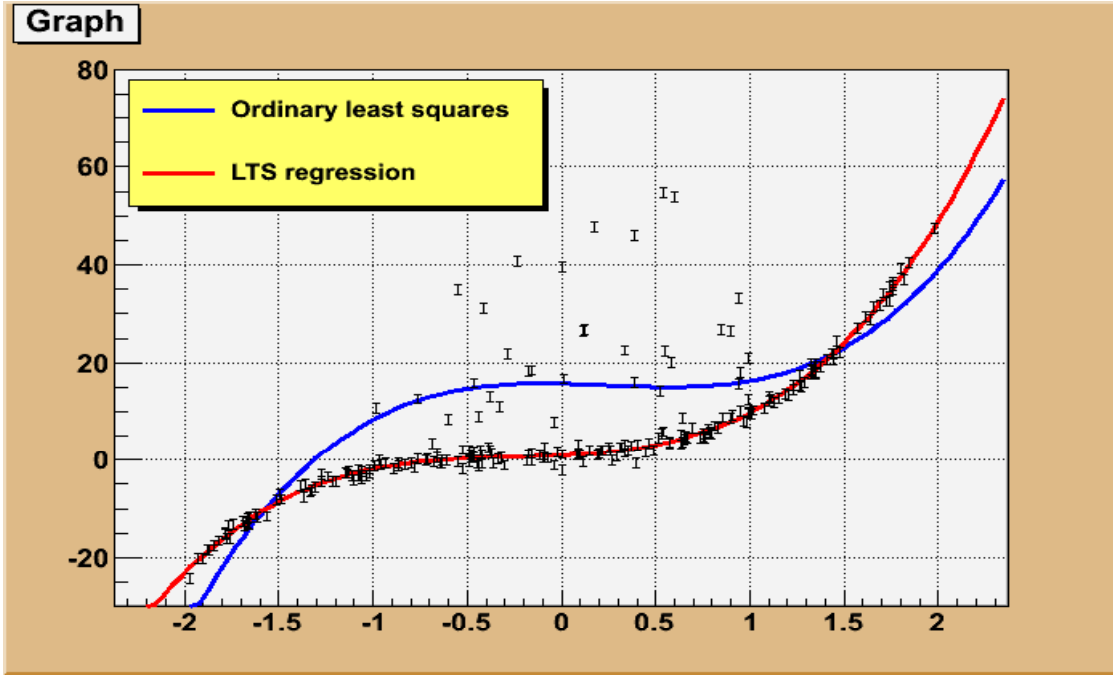
Example:

```
TH1D* h = new TH1D(....);
// Fill the Histogram
h->Fit("gaus", "LE+", "SAME", 2.4, 8.6);
```

Fitting Options

Several options are available:

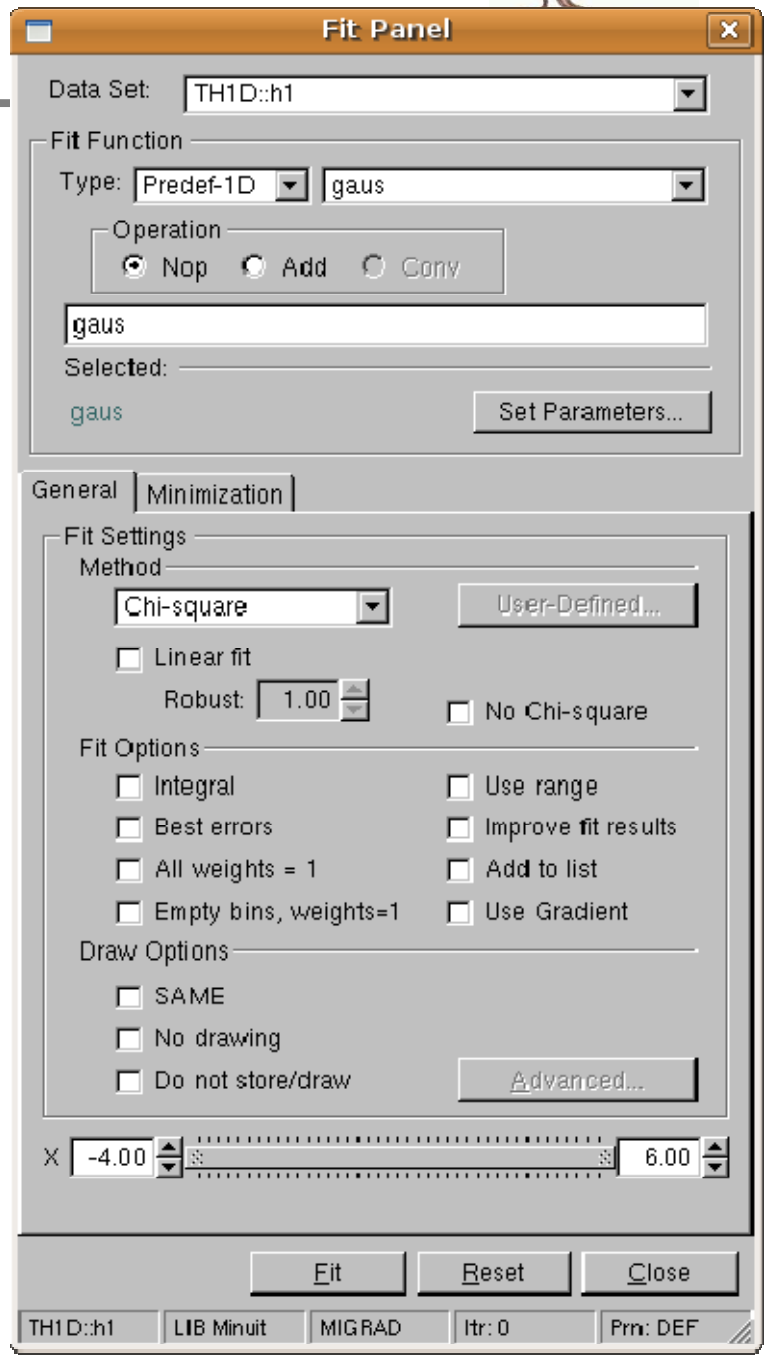
- Binned/Unbinned fit
- User defined model and objective functions
- Choice of minimization method.
  - Minuit and Minuit2
  - Fumili
  - GSL
- Automatic use of linear fits for linear functions
- Robust fit option for linear fits



Presenting the FitPanel

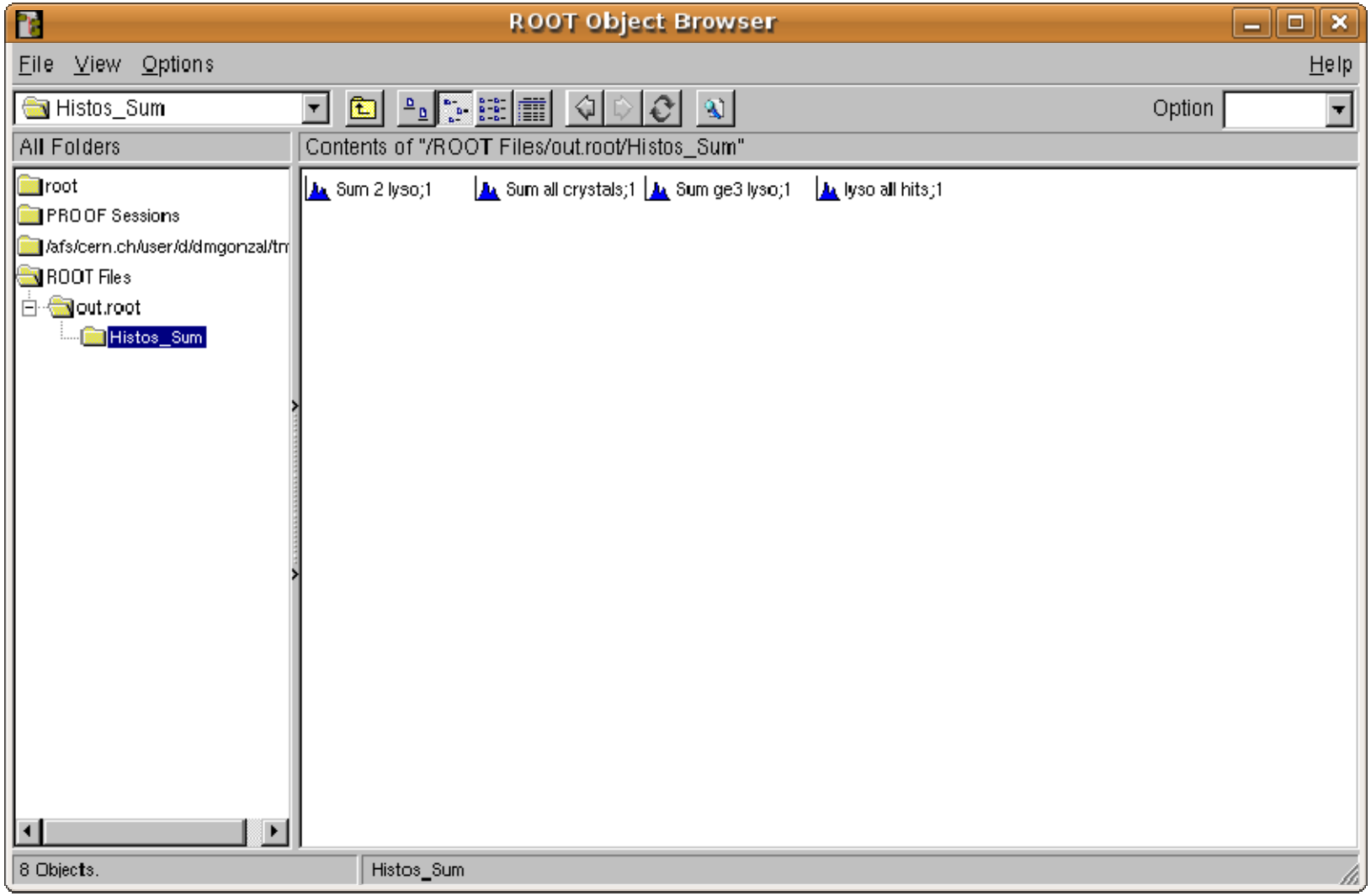
GUI for fitting all ROOT data analysis objects:

- Histograms
  - TH1, TH2 and TH3
  - TProfile, TProfile2D and TProfile3D
- TGraph, TGraphErrors and TGraphAsymError
- TGraph2D, TGraph2DError
- Trees



How to get the FitPanel

It can be reached from 3 different places...



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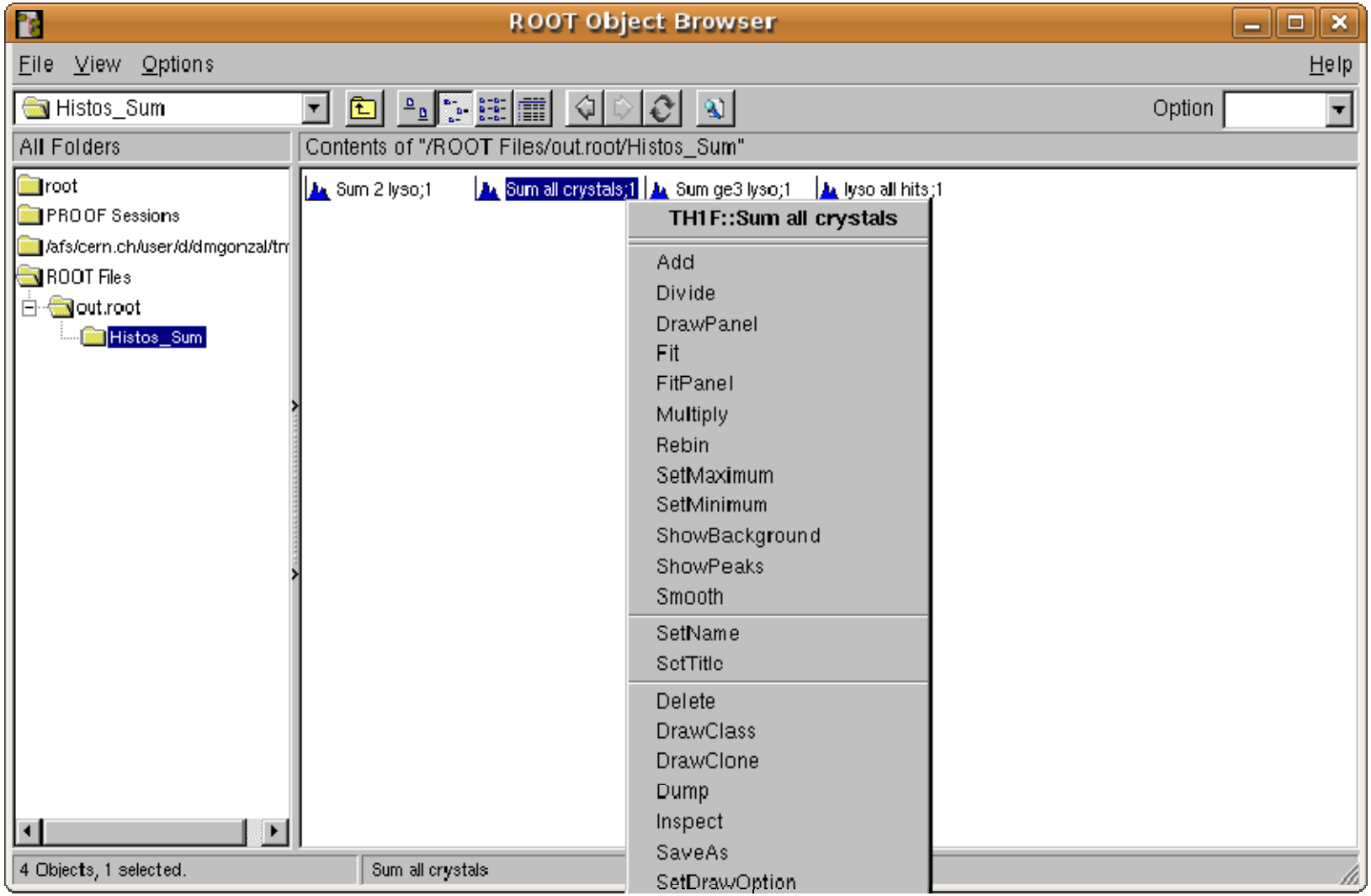

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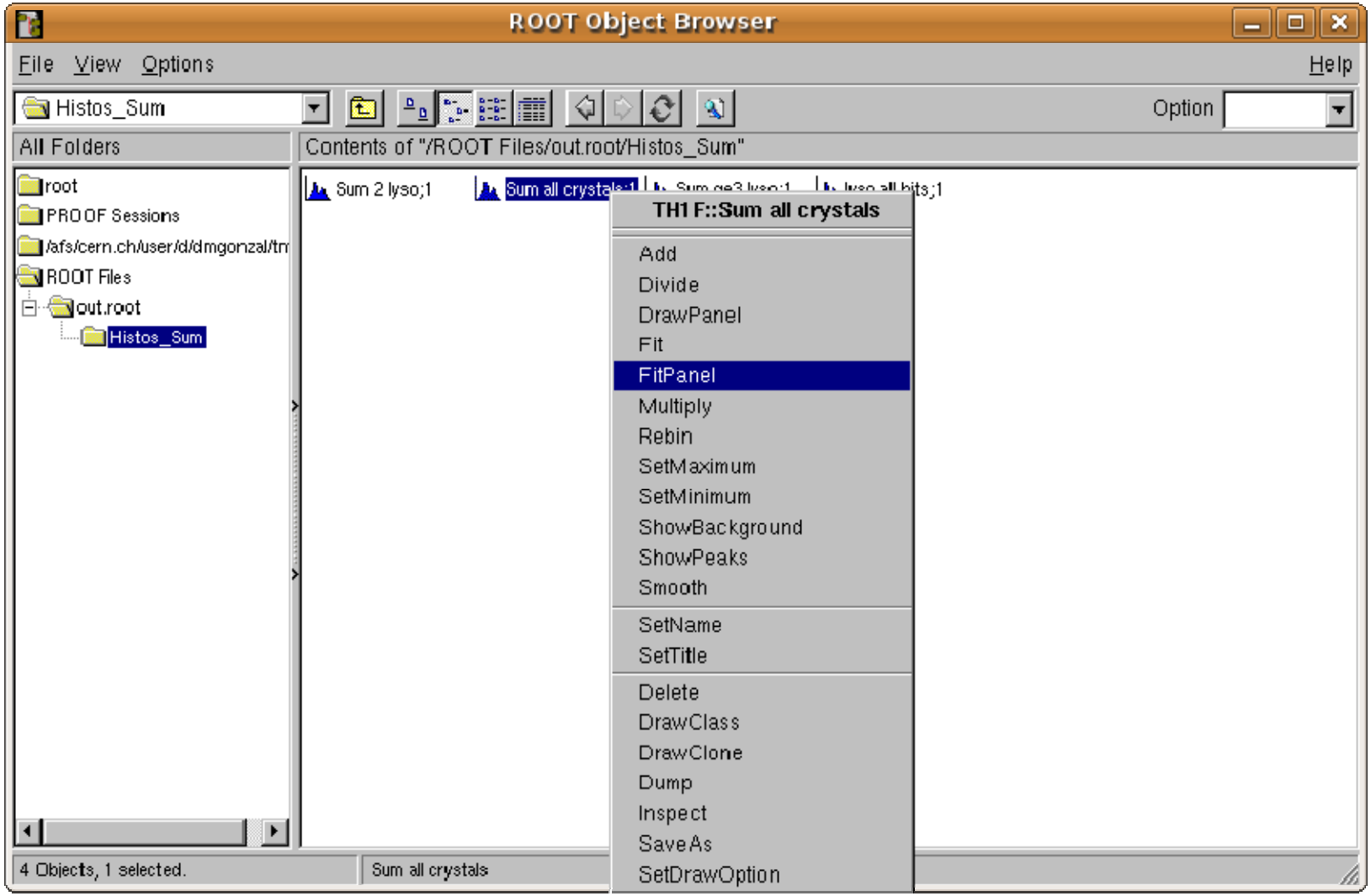

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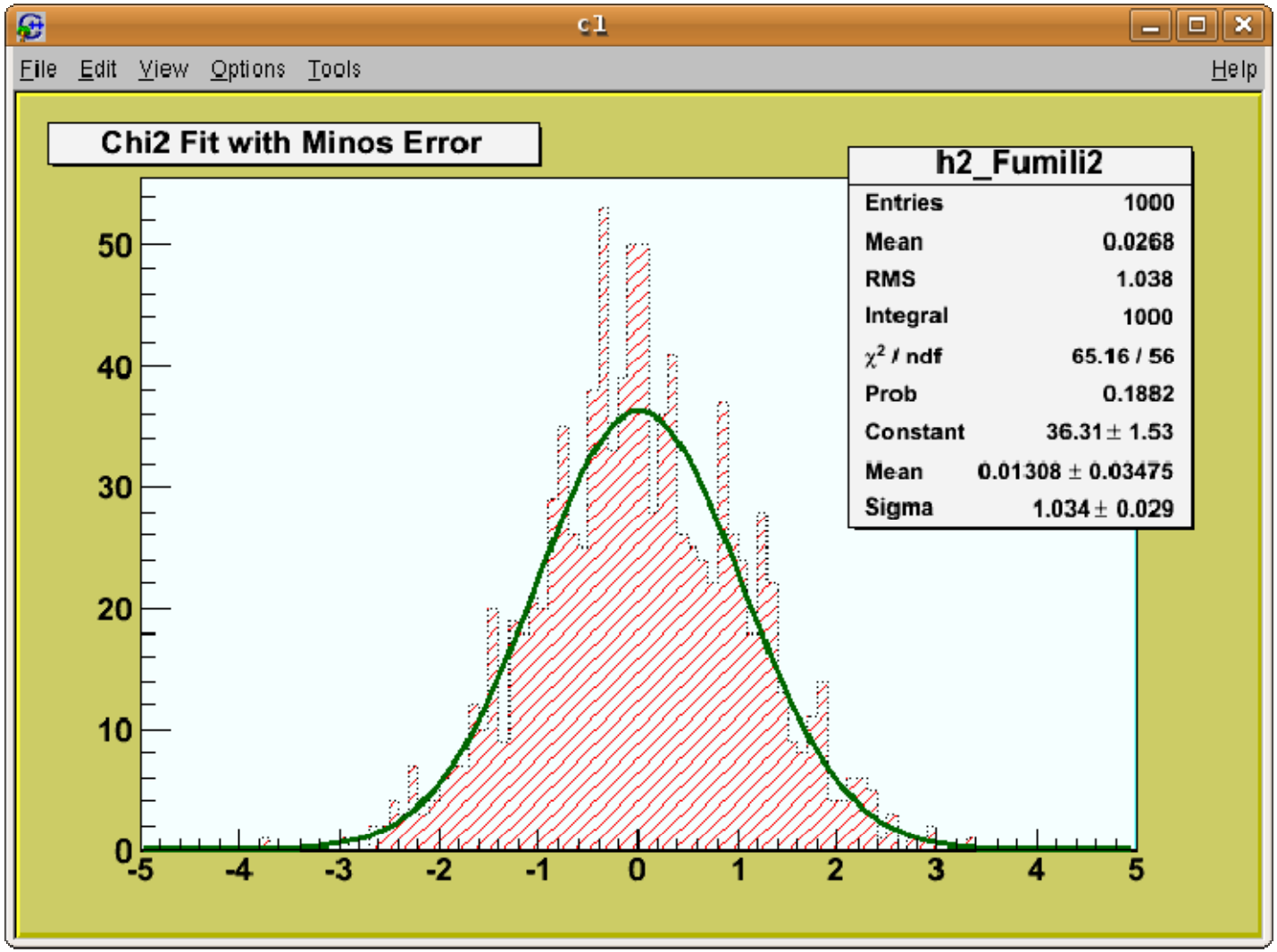

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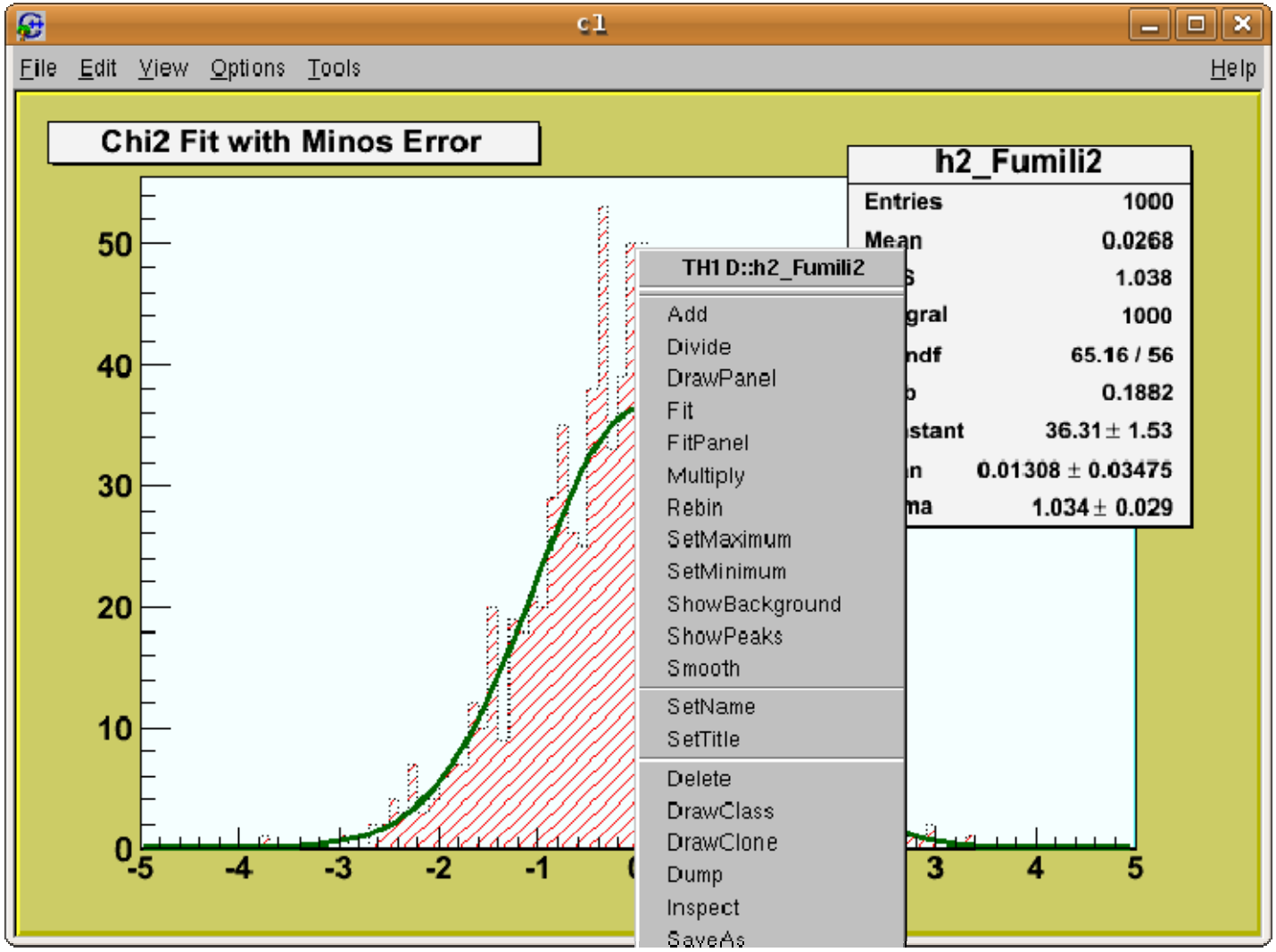

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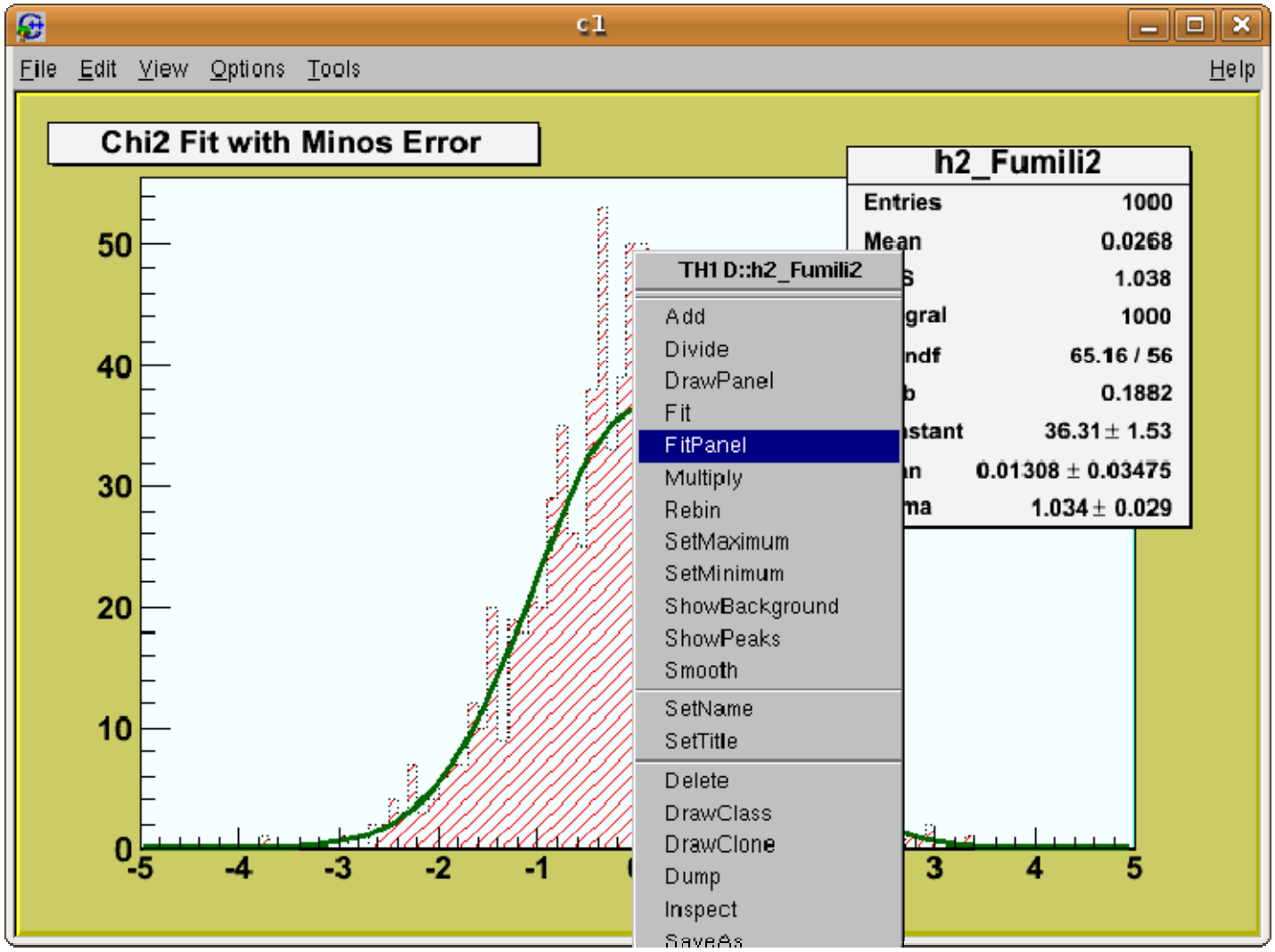

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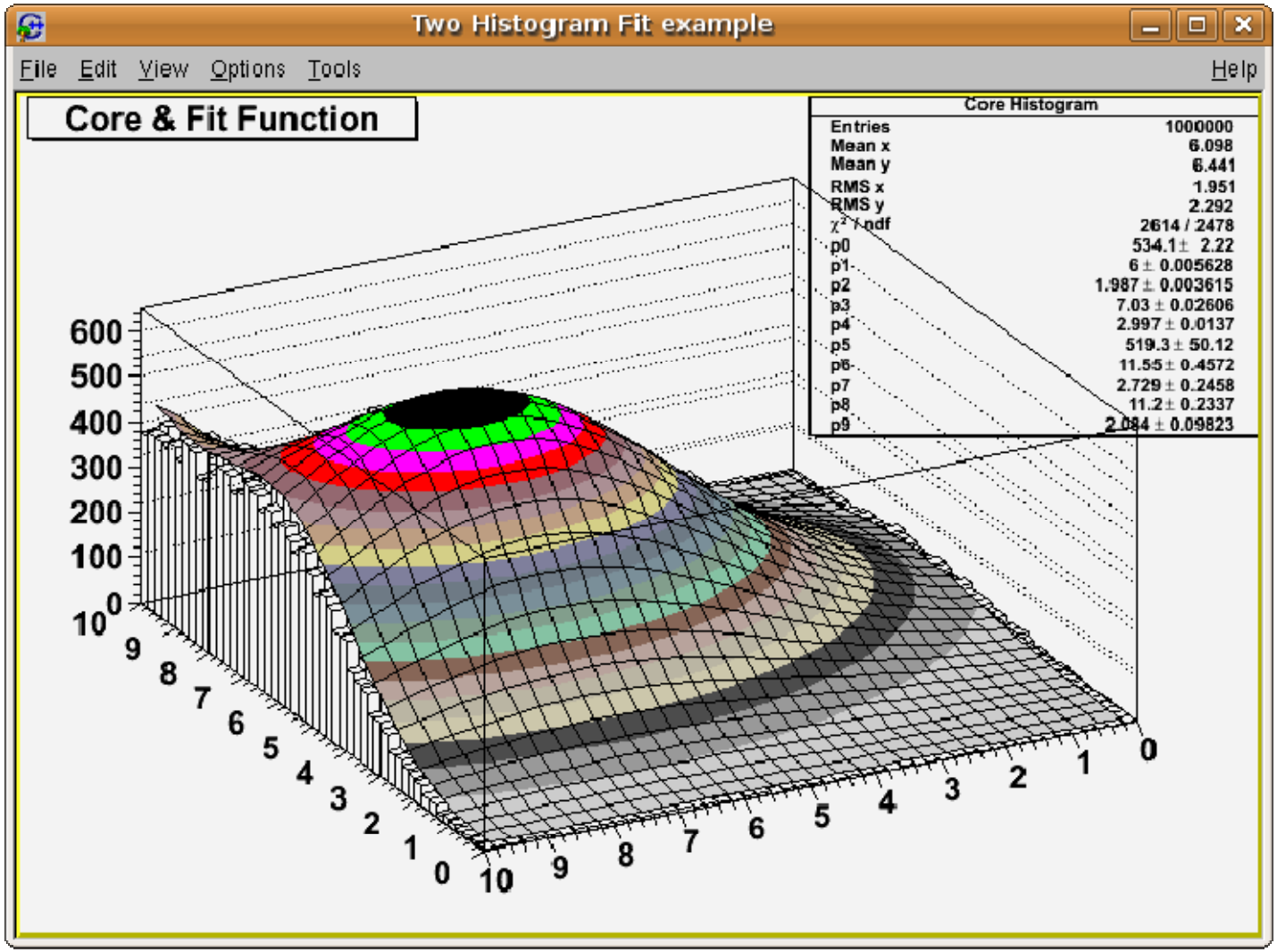

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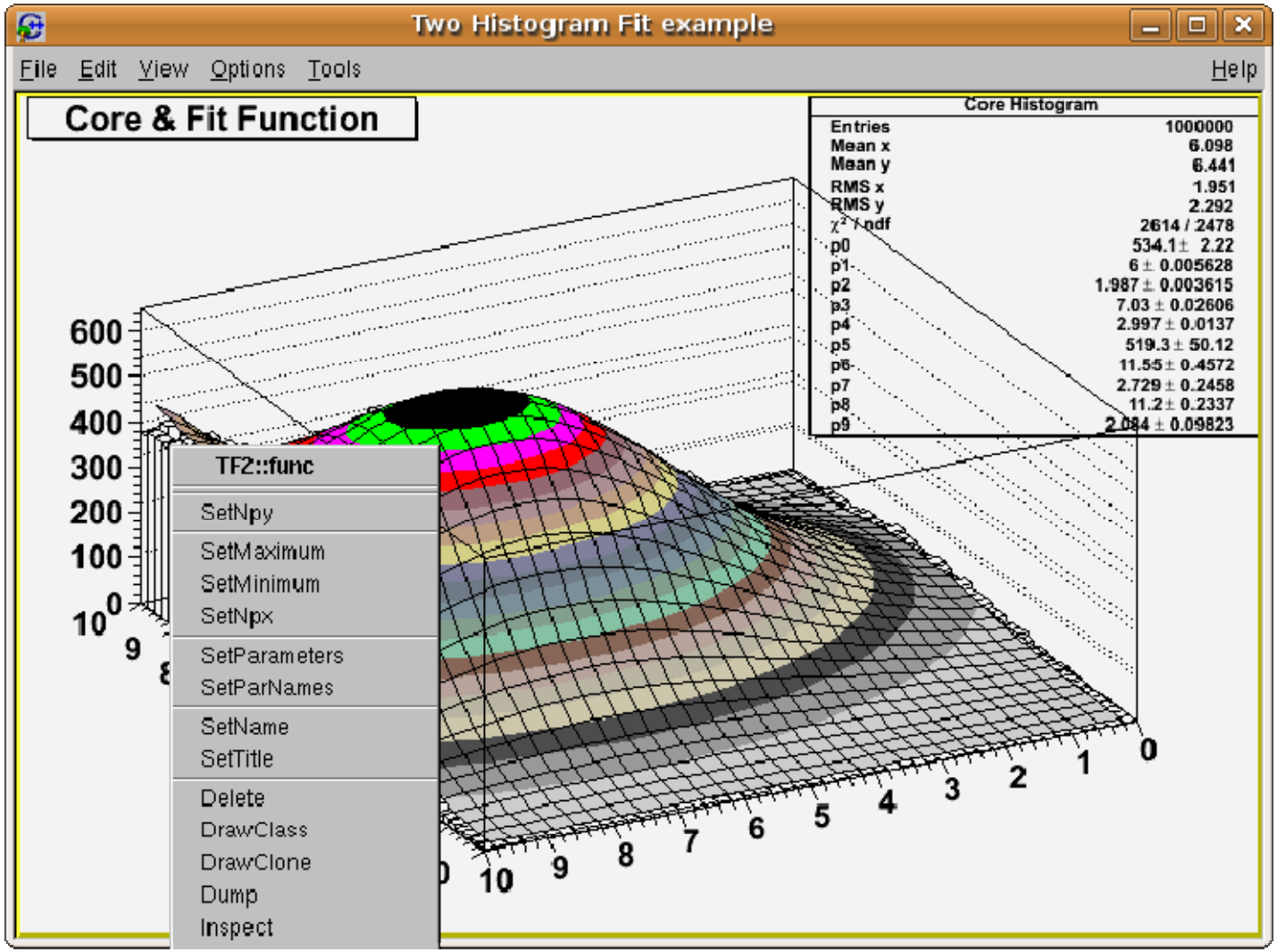

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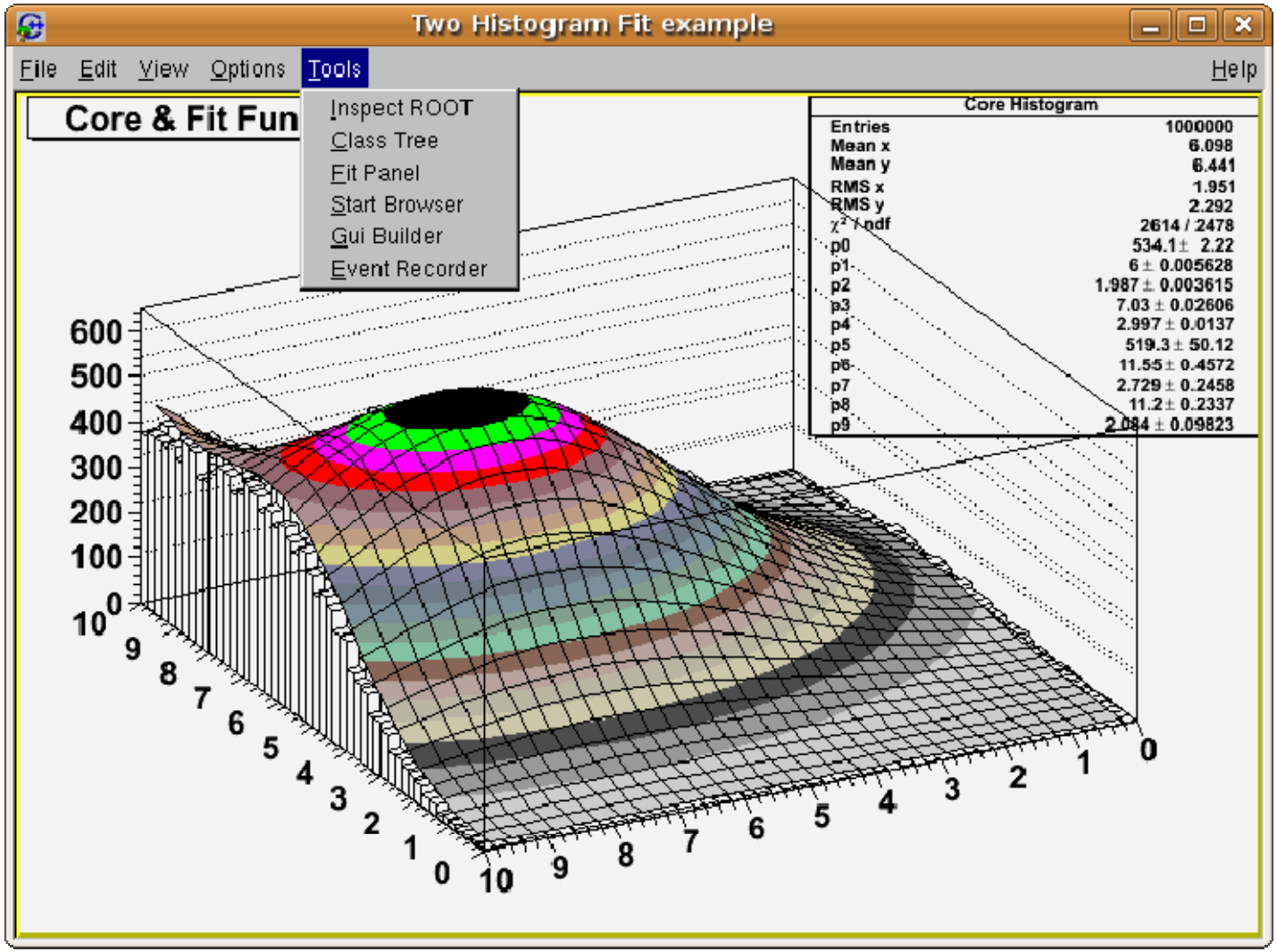

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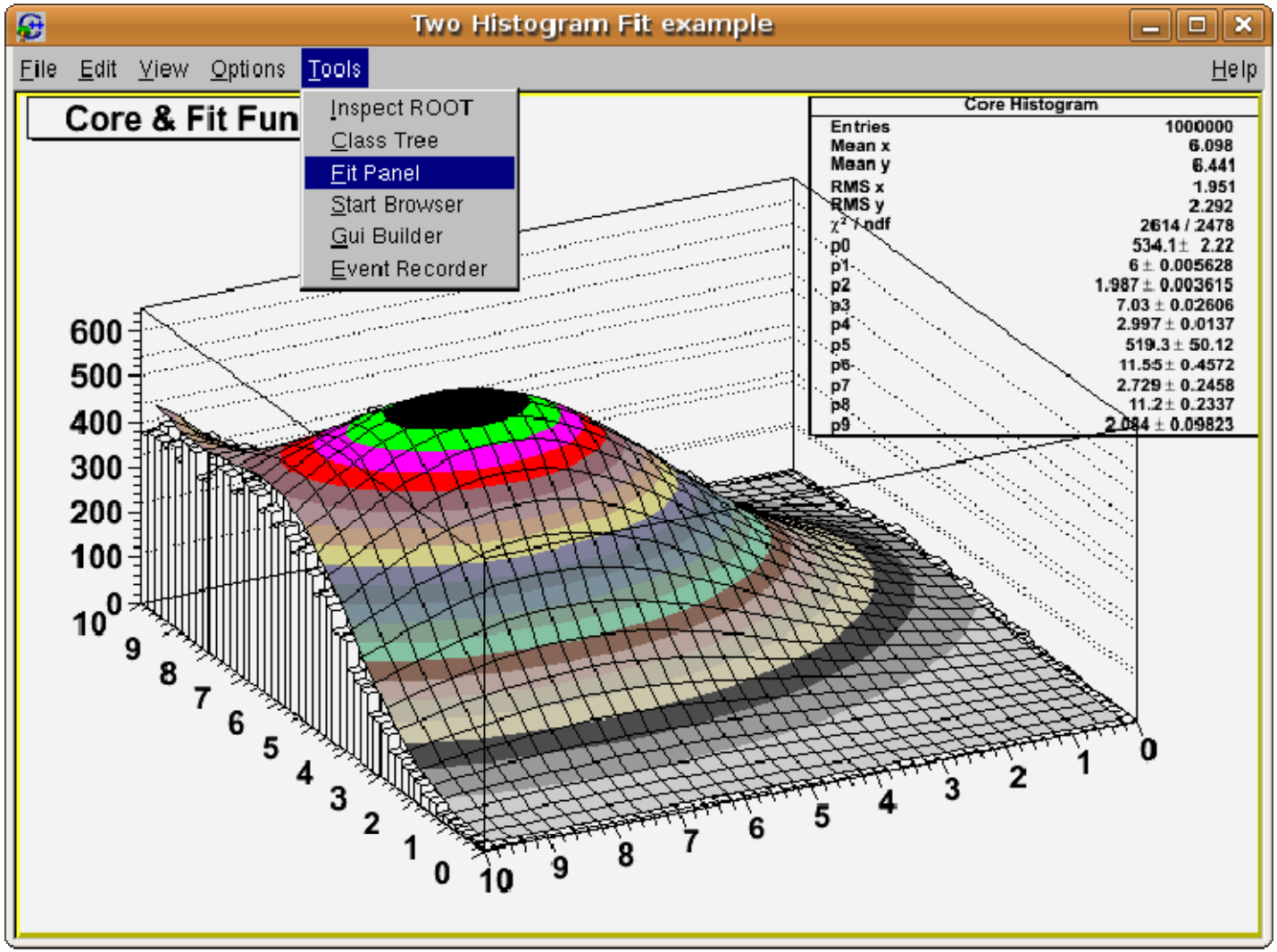
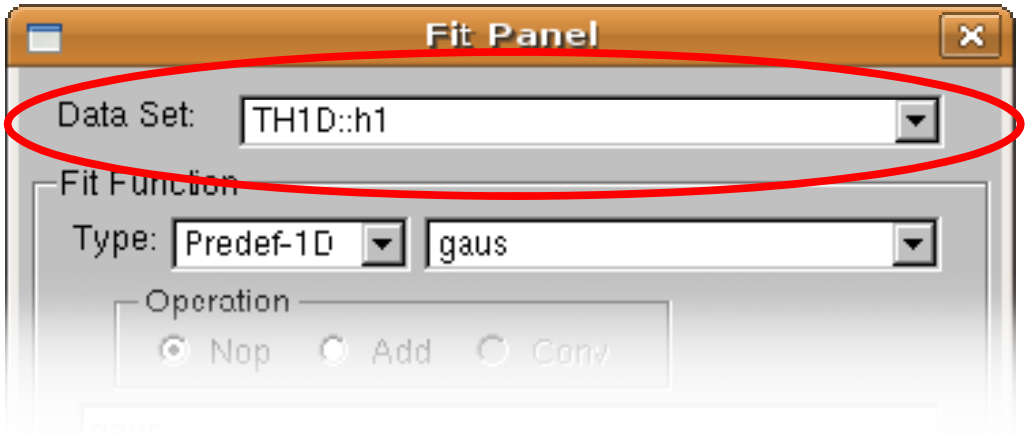
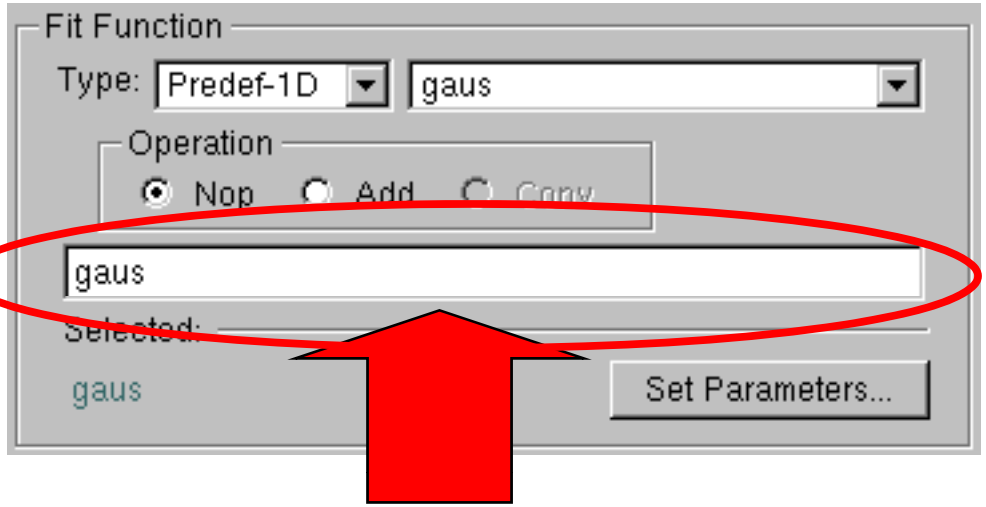


Setting Object and Function

Select the Object in 'Data Set'

- It can be an already drawn object
- Or any object registered in gROOT





Although, you can specify it by hand!

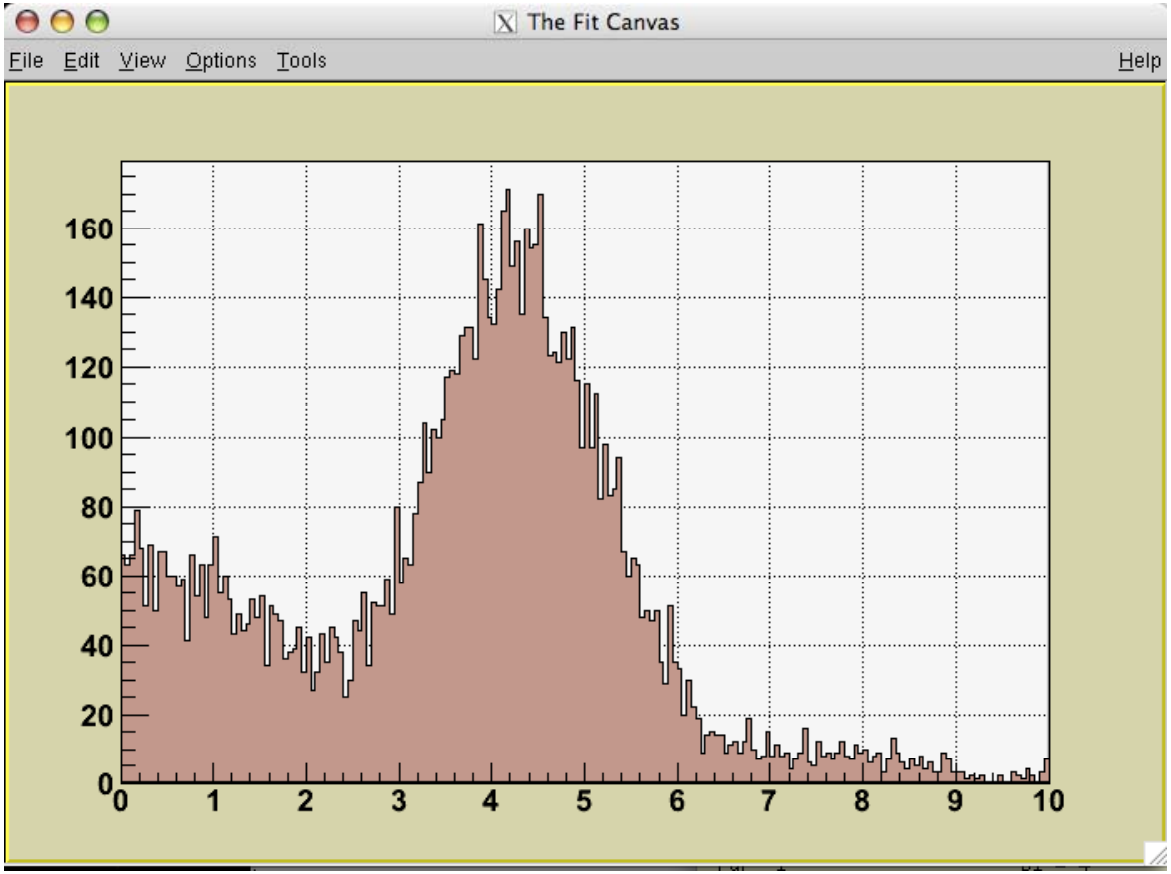
Select the type of function to used:

- Predefined 1D and 2D functions
- User defined functions
- Functions used in previous fits

Select the particular function

Tuning Parameters

Immediate preview of the changed function



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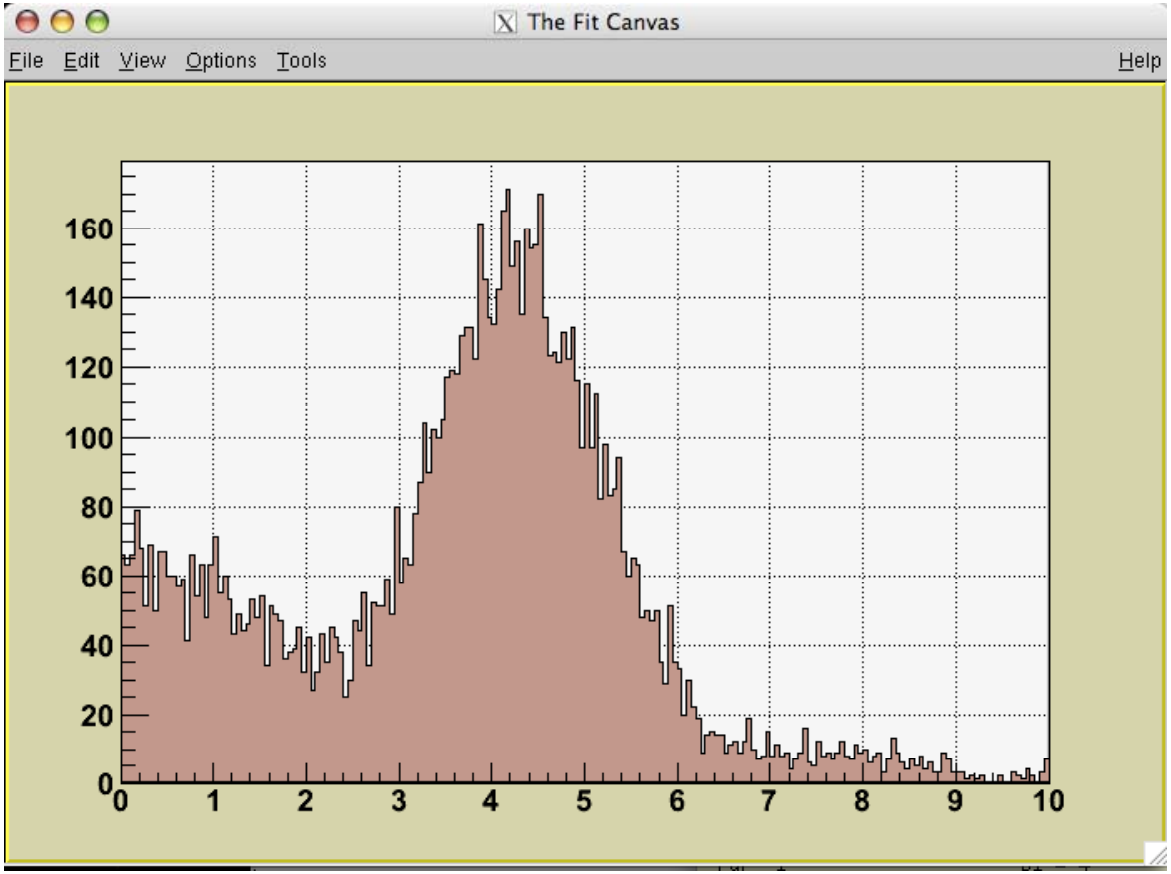

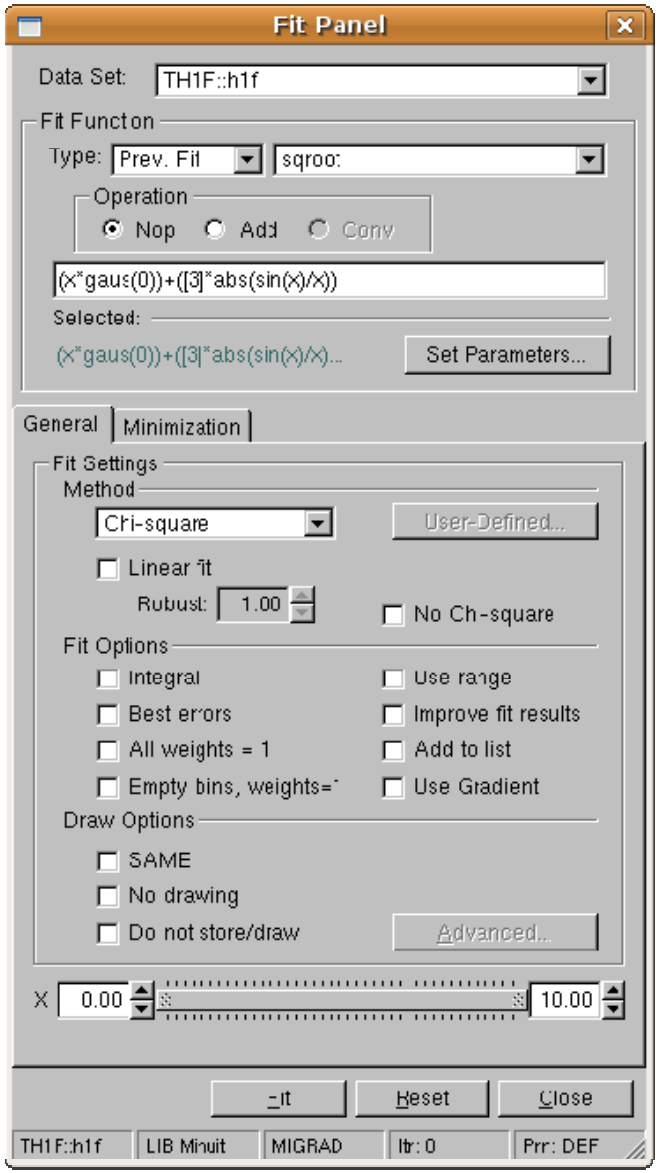

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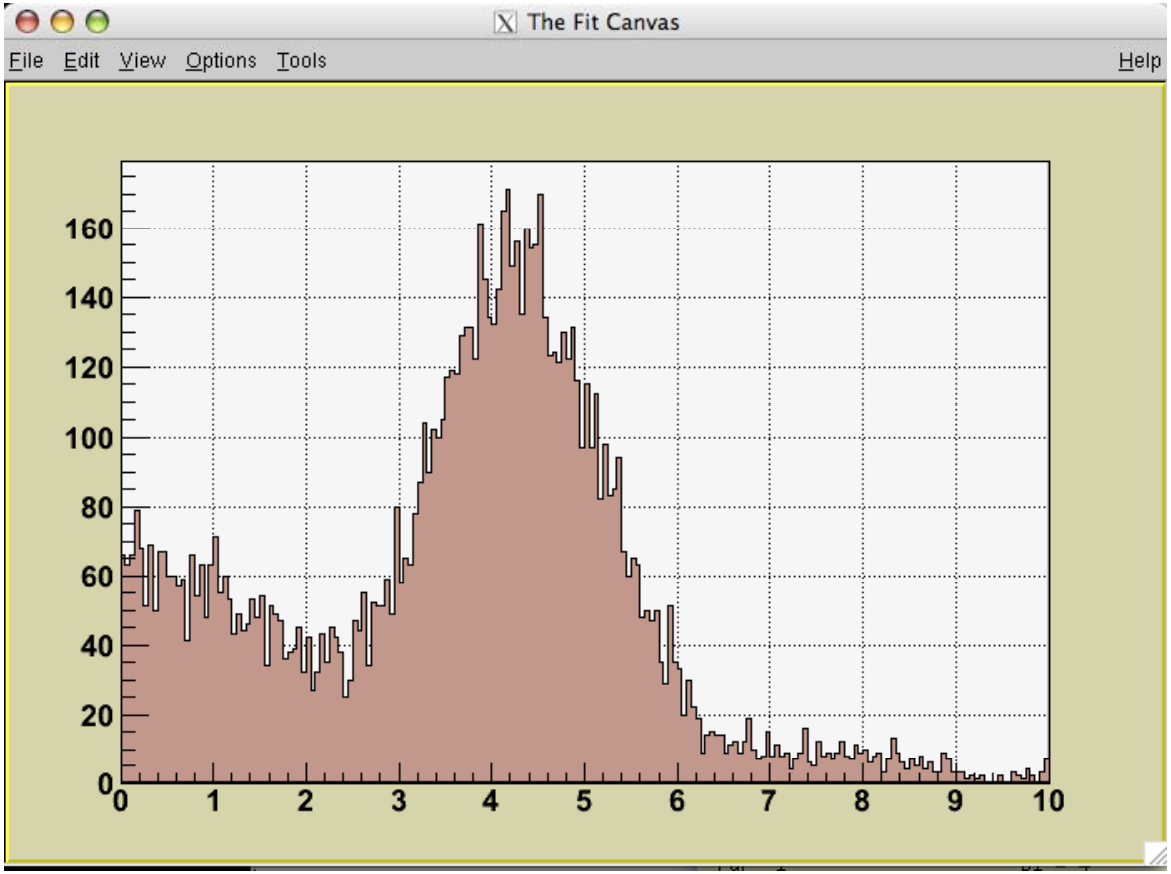

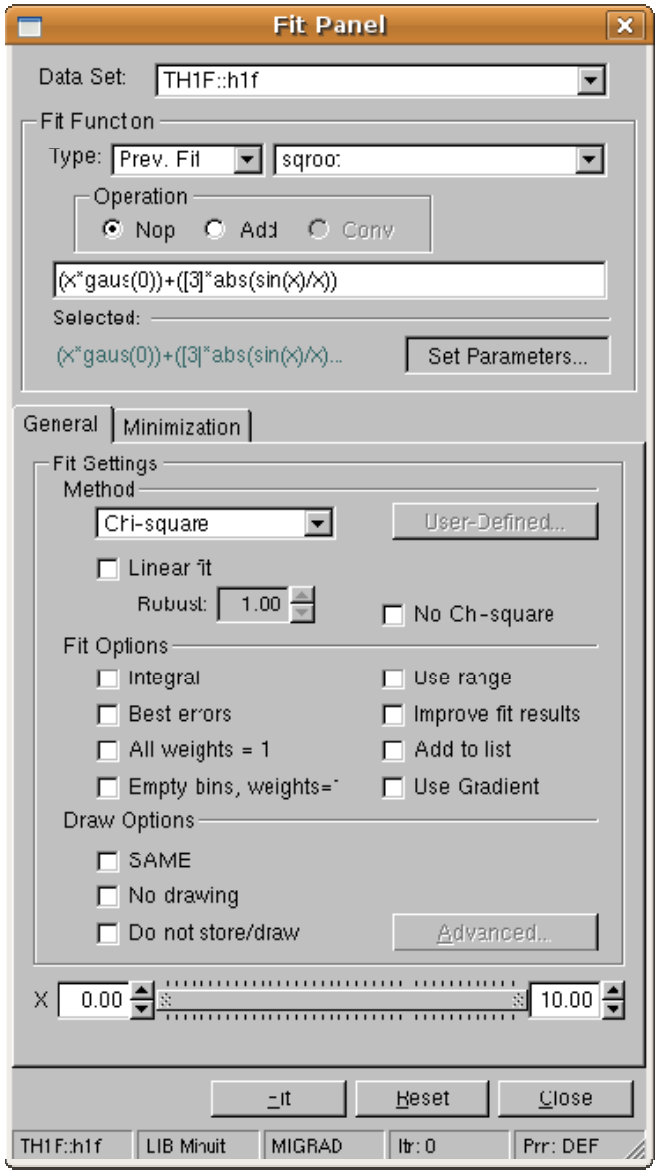

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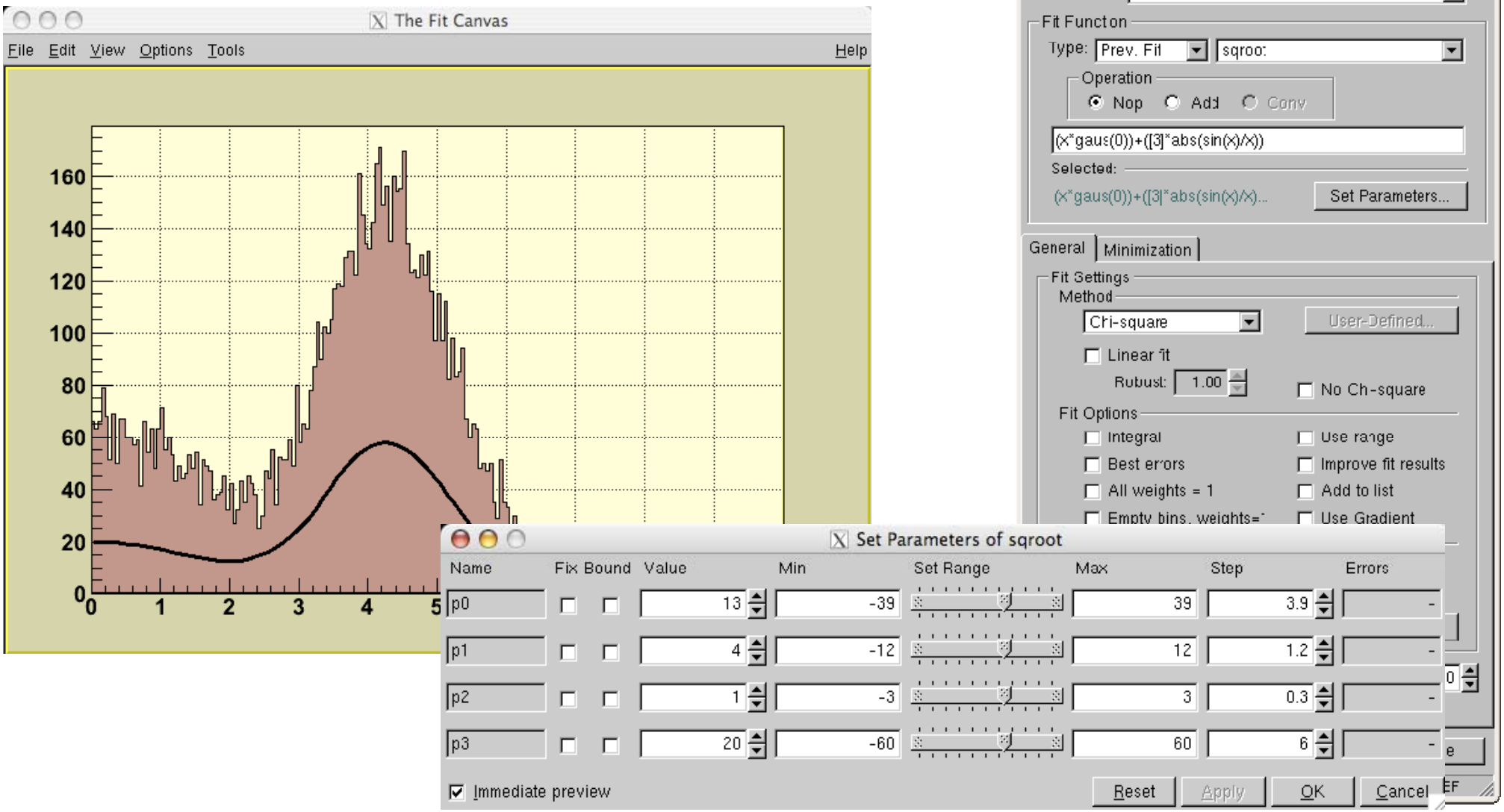

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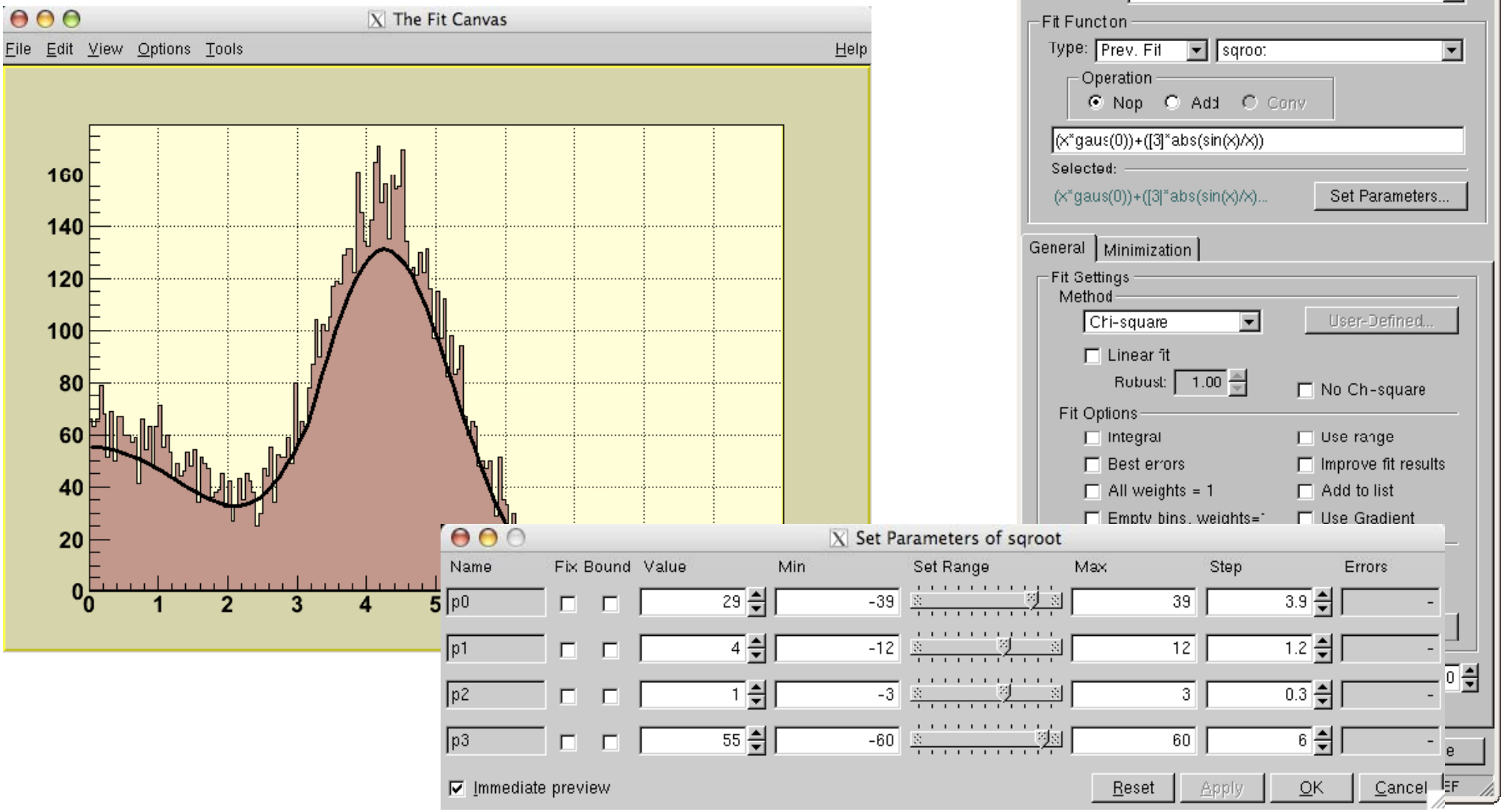

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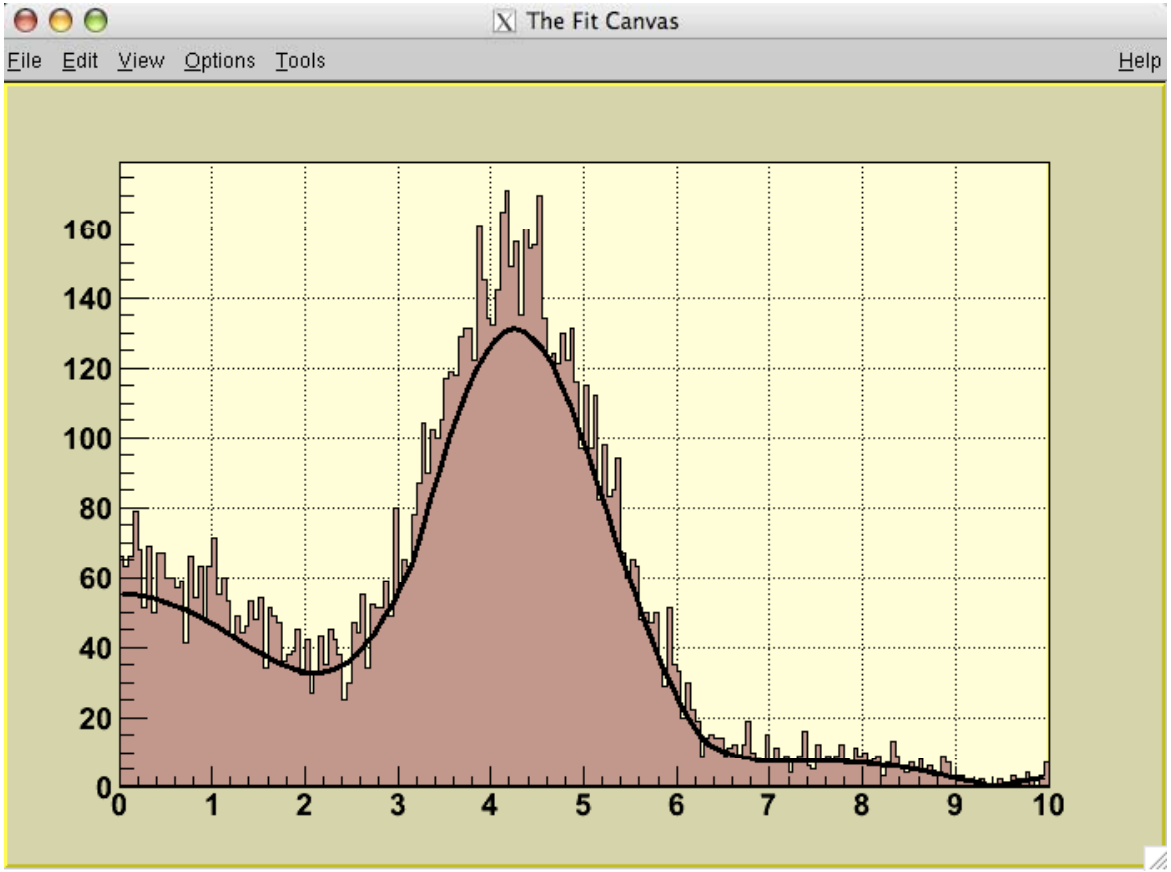

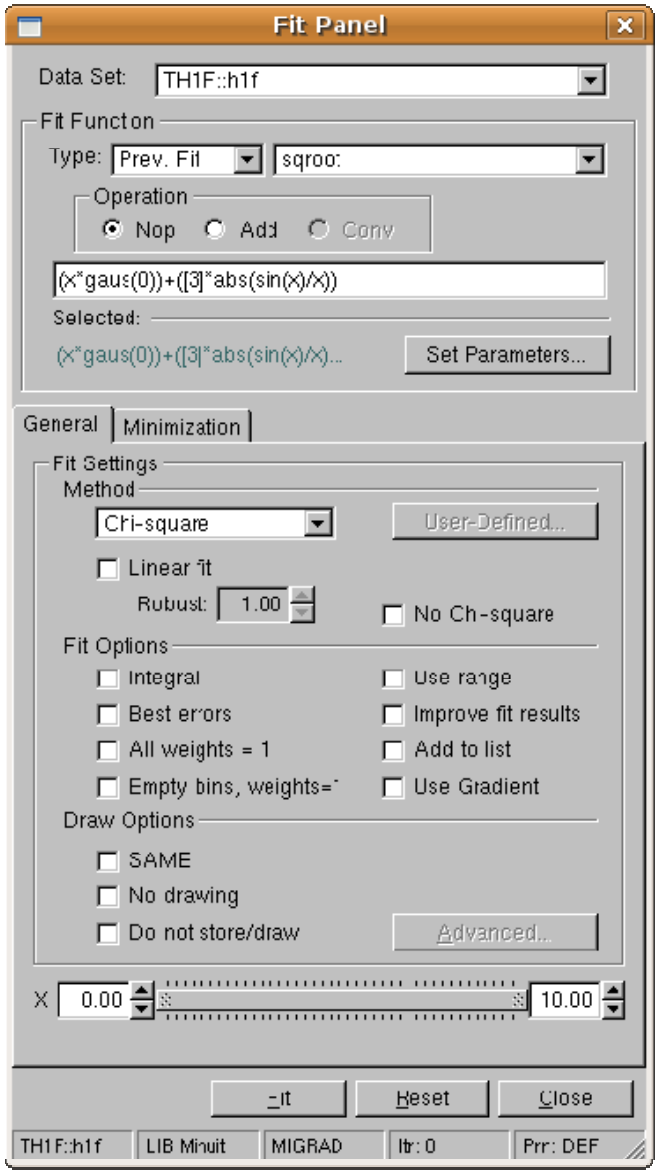

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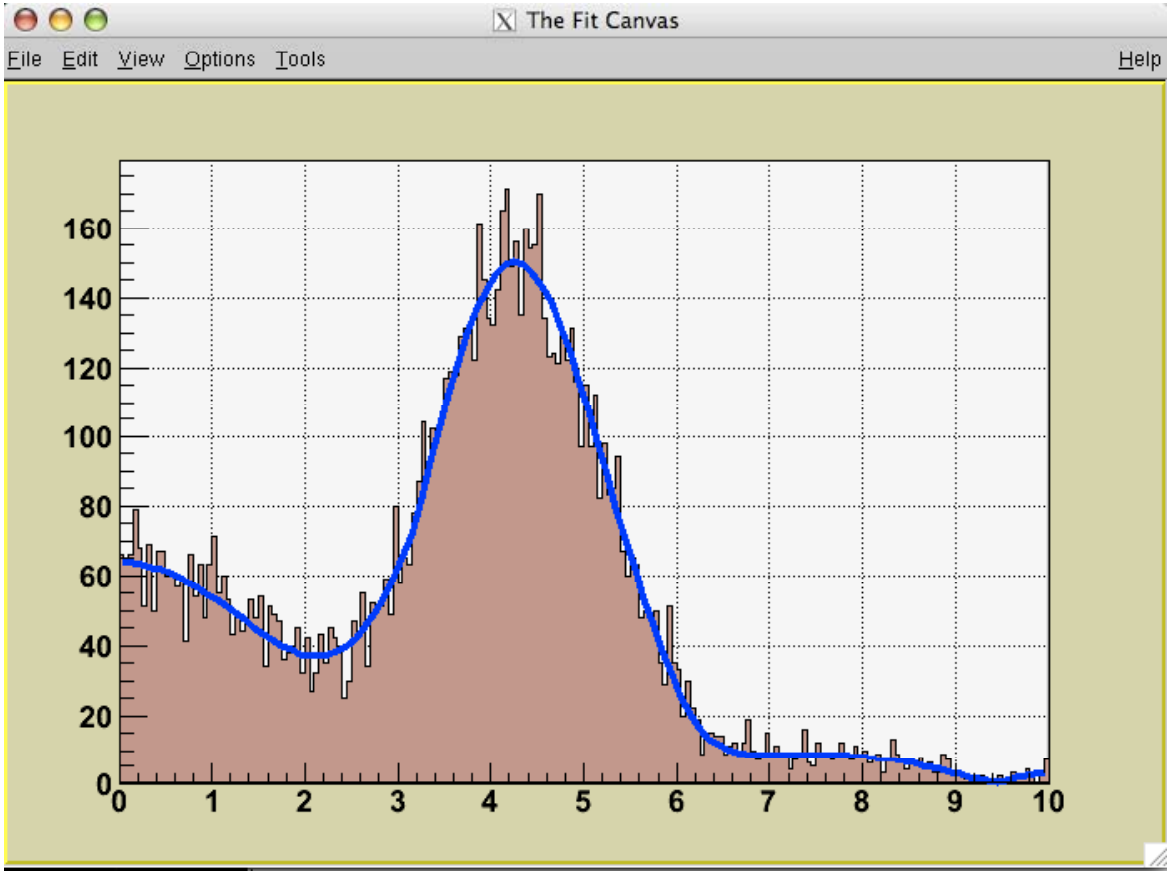
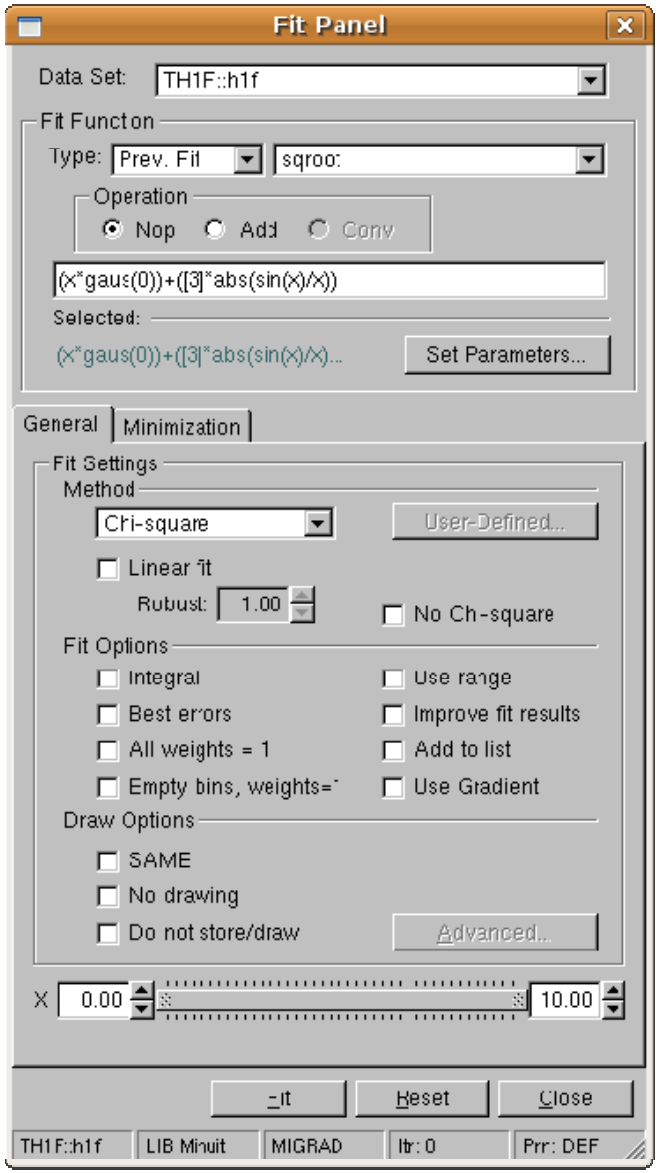
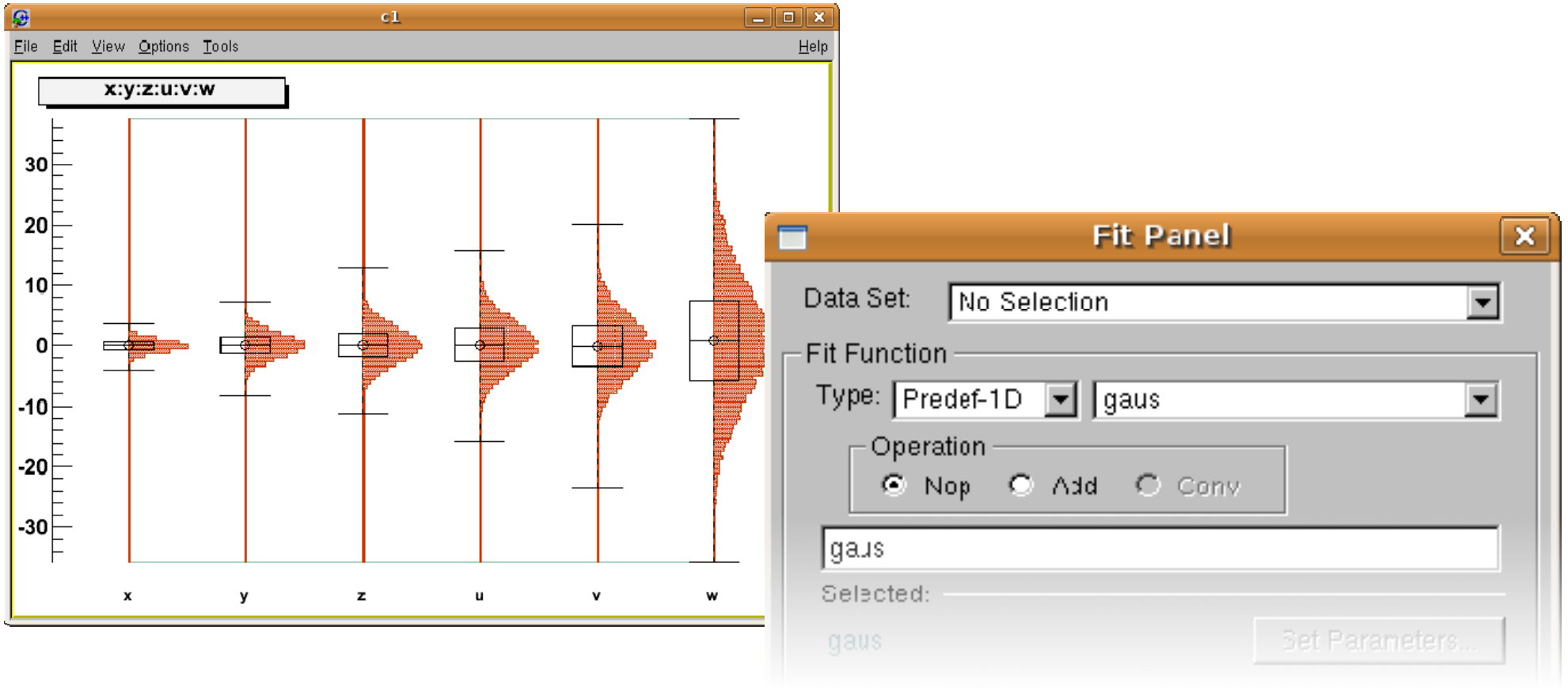




Special Case: TTree

Unbinned fit for un-limited number of variables

- Select the variables to use
- Select the cuts



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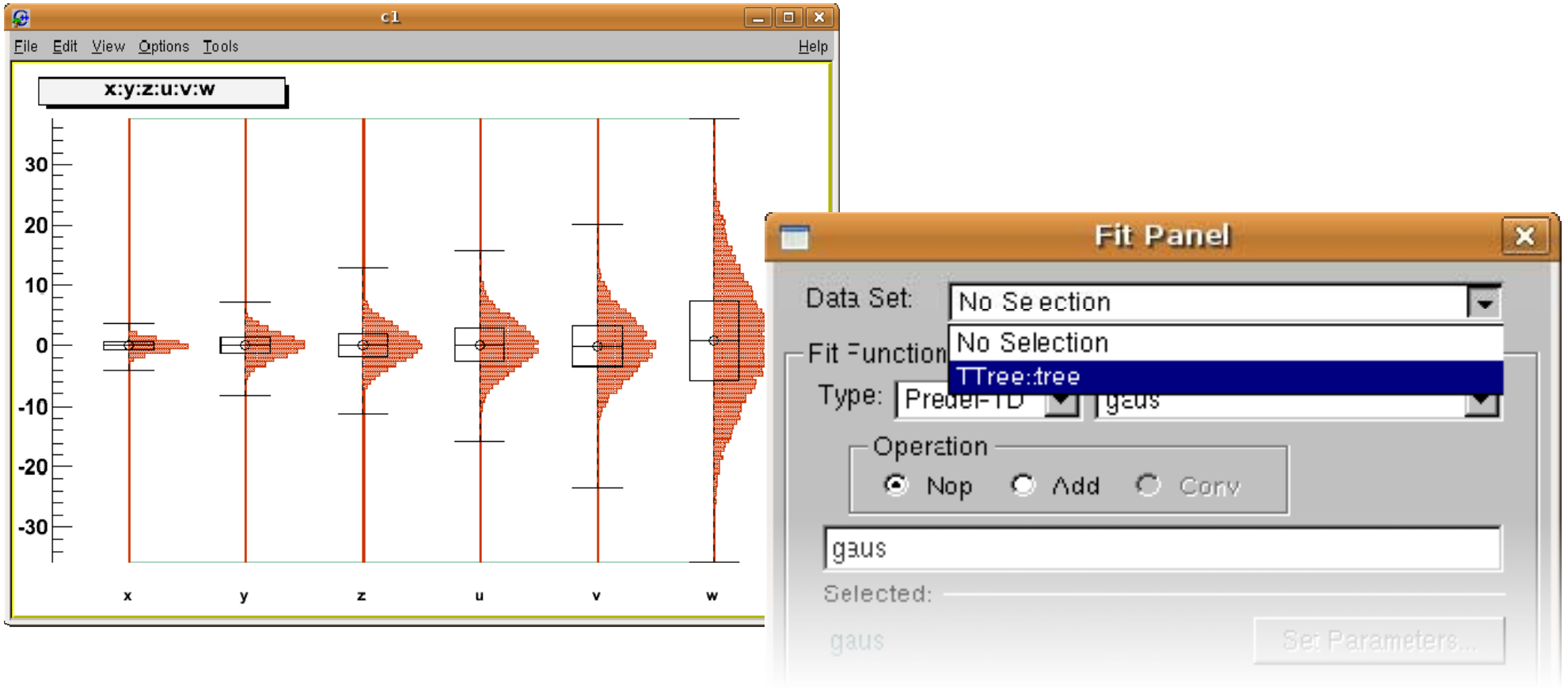

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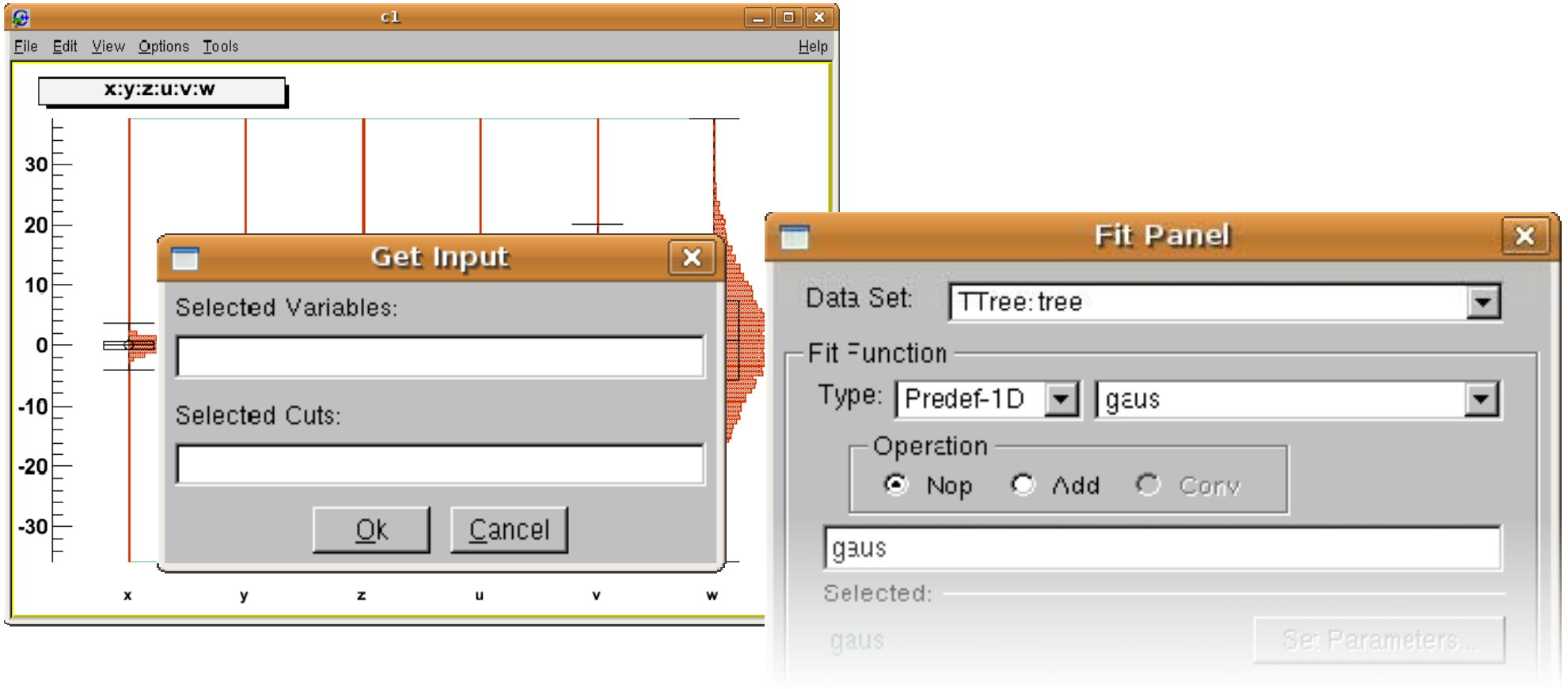

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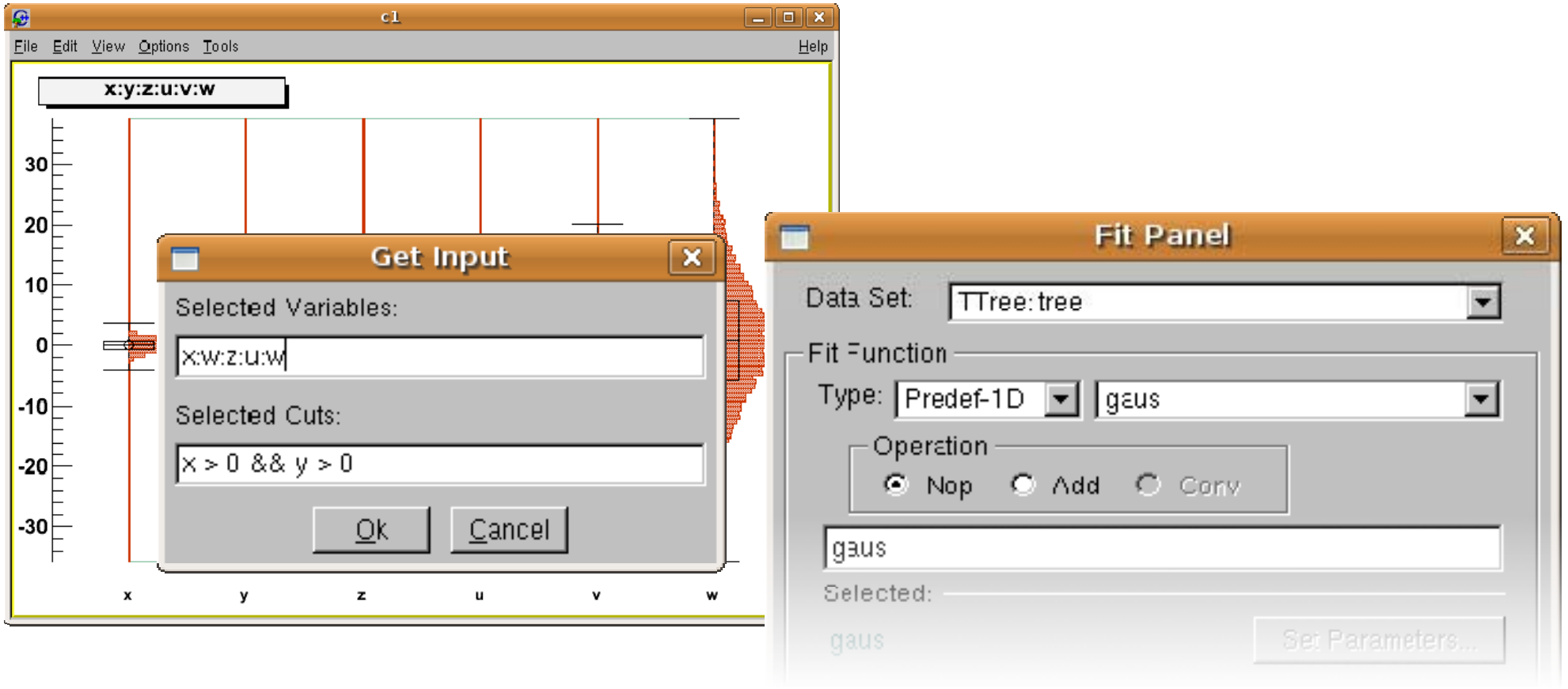

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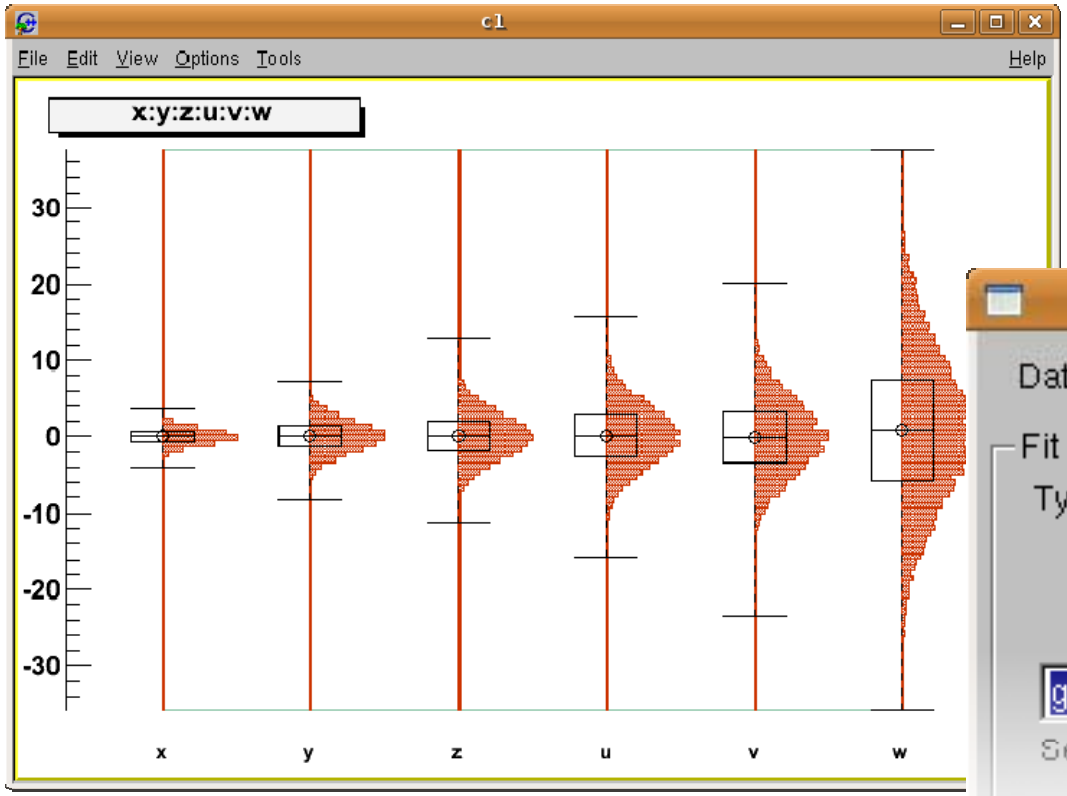
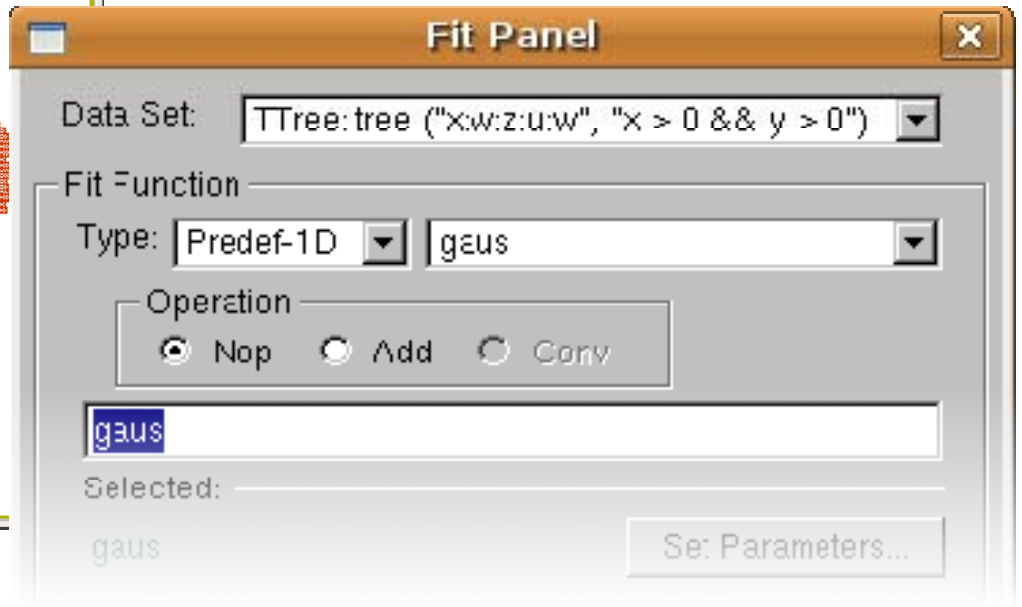
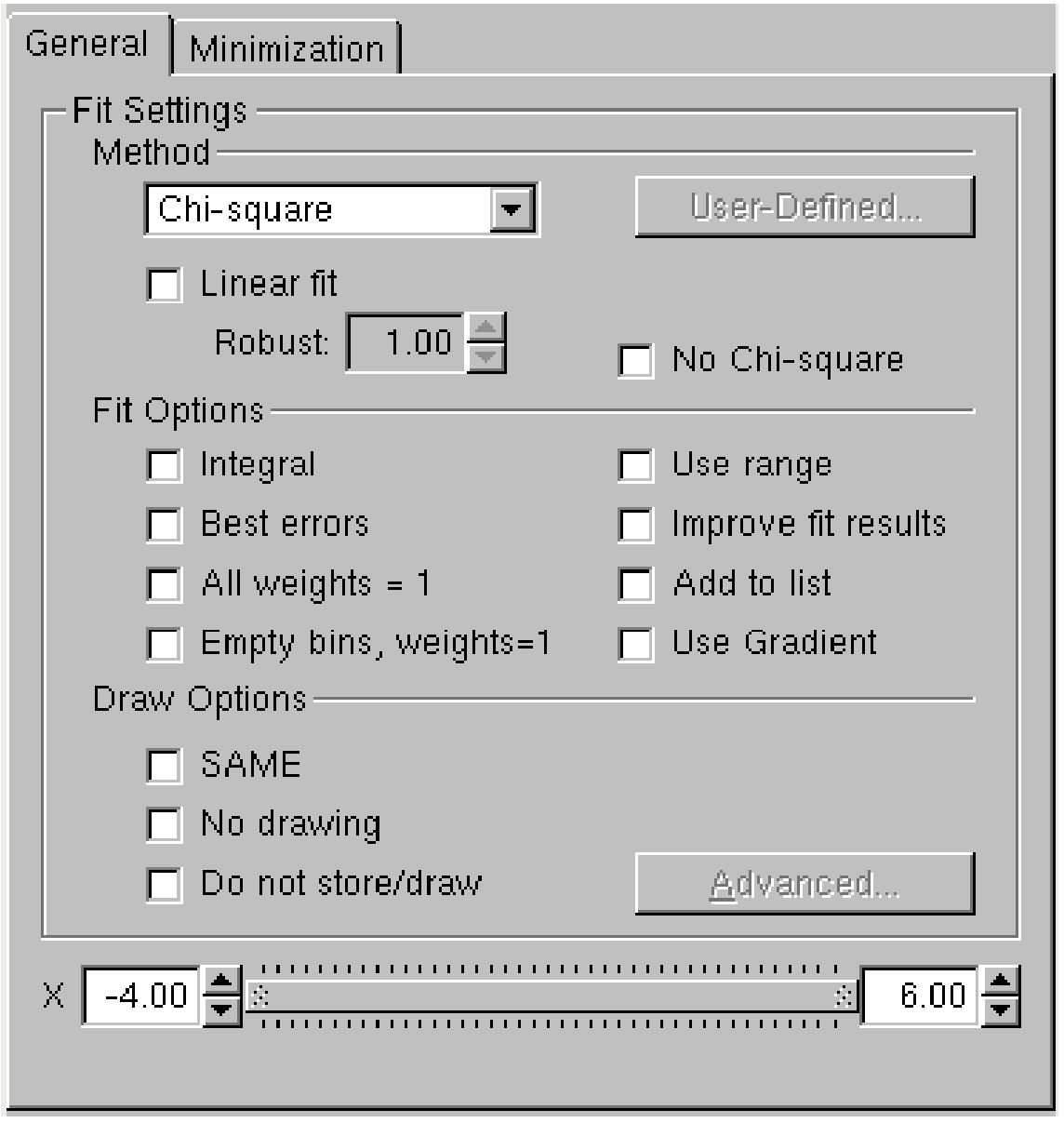




Setting the Fit Options

- Fit Method
- Fitting Options
- Drawing options
- Range selection



Setting the Fit Options

General | Minimization

Library

Minuit Minuit2 Fumili

Method

MIGRAD SIMPLEX FUMILI

SCAN Combination

Settings

Use ENTER key to validate a new value or click on Reset button to set the defaults.

Error definition (default = 1): 1.00

Max tolerance (precision): 0.0001

Max number of iterations: 0

Print Options

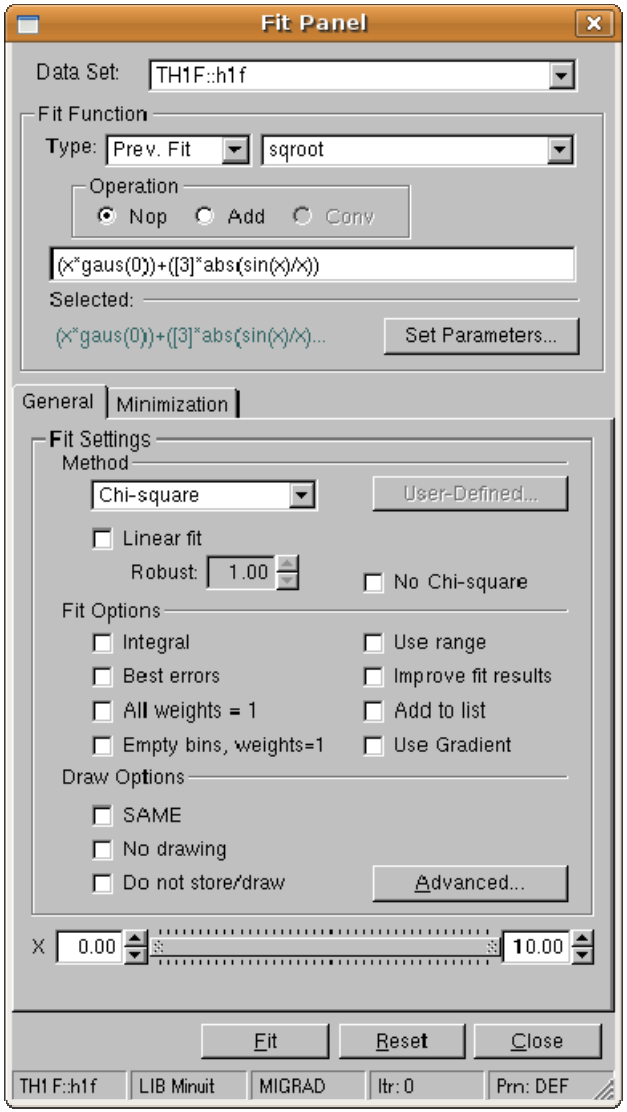
Default Verbose Quiet

- Select the minimization algorithm
  - Library
  - Method
- Minimizer parameters
- Printing Options

Advanced Options

Advanced drawing options from GUI

- Contour plots



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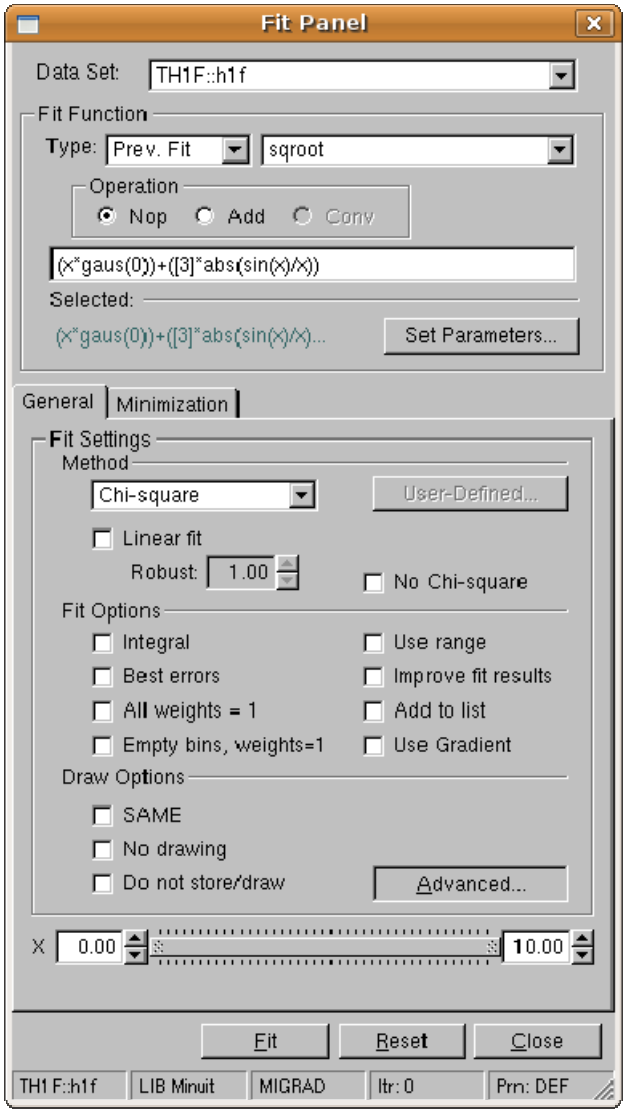

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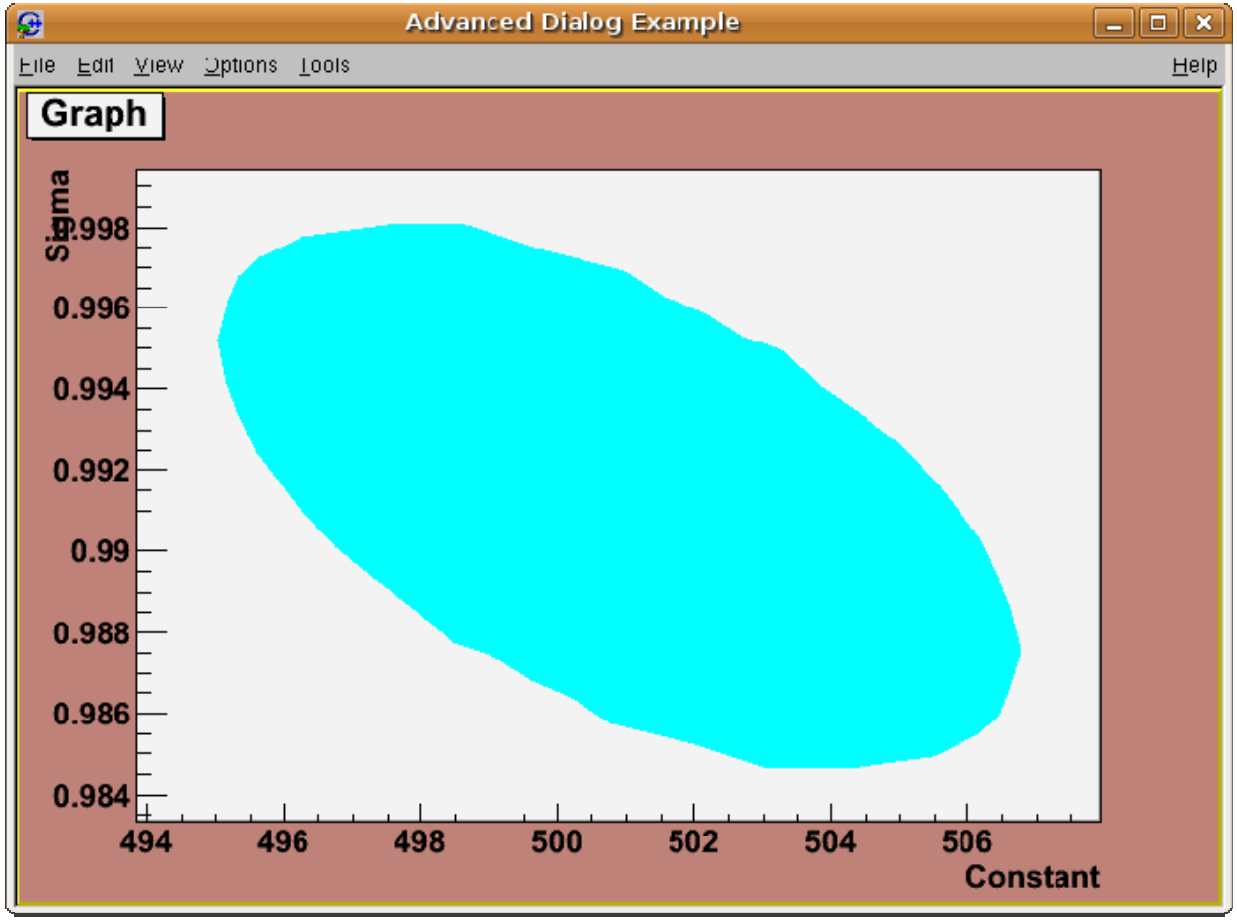

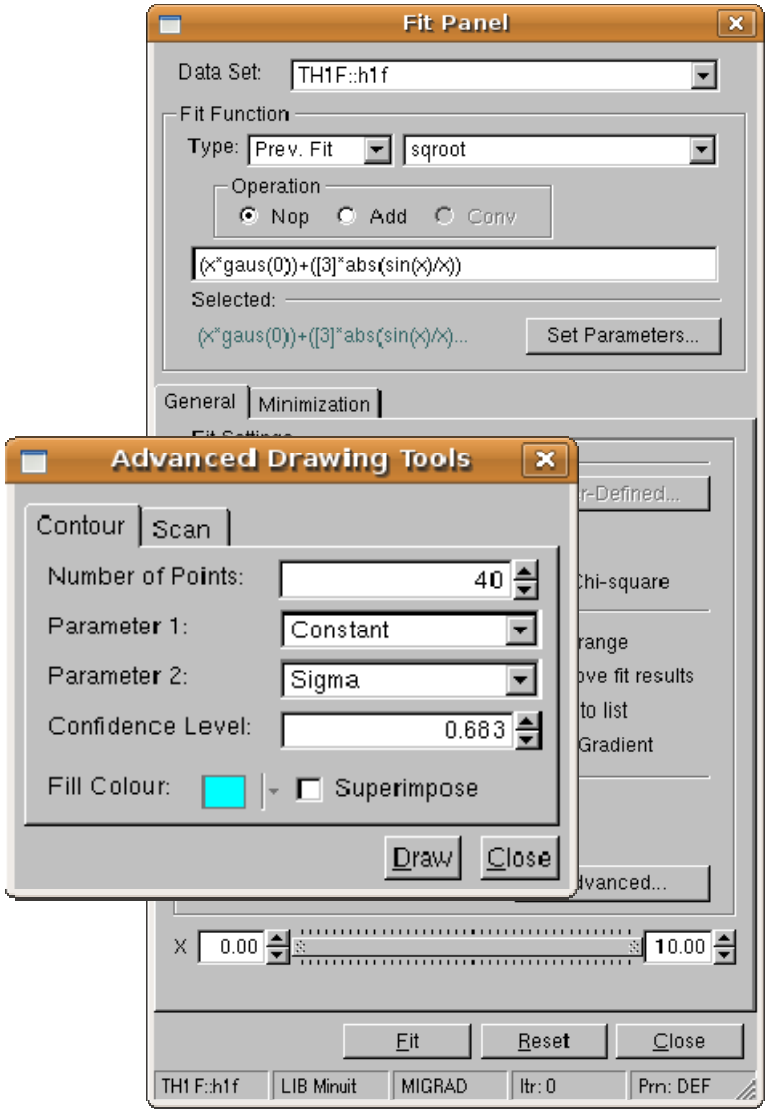

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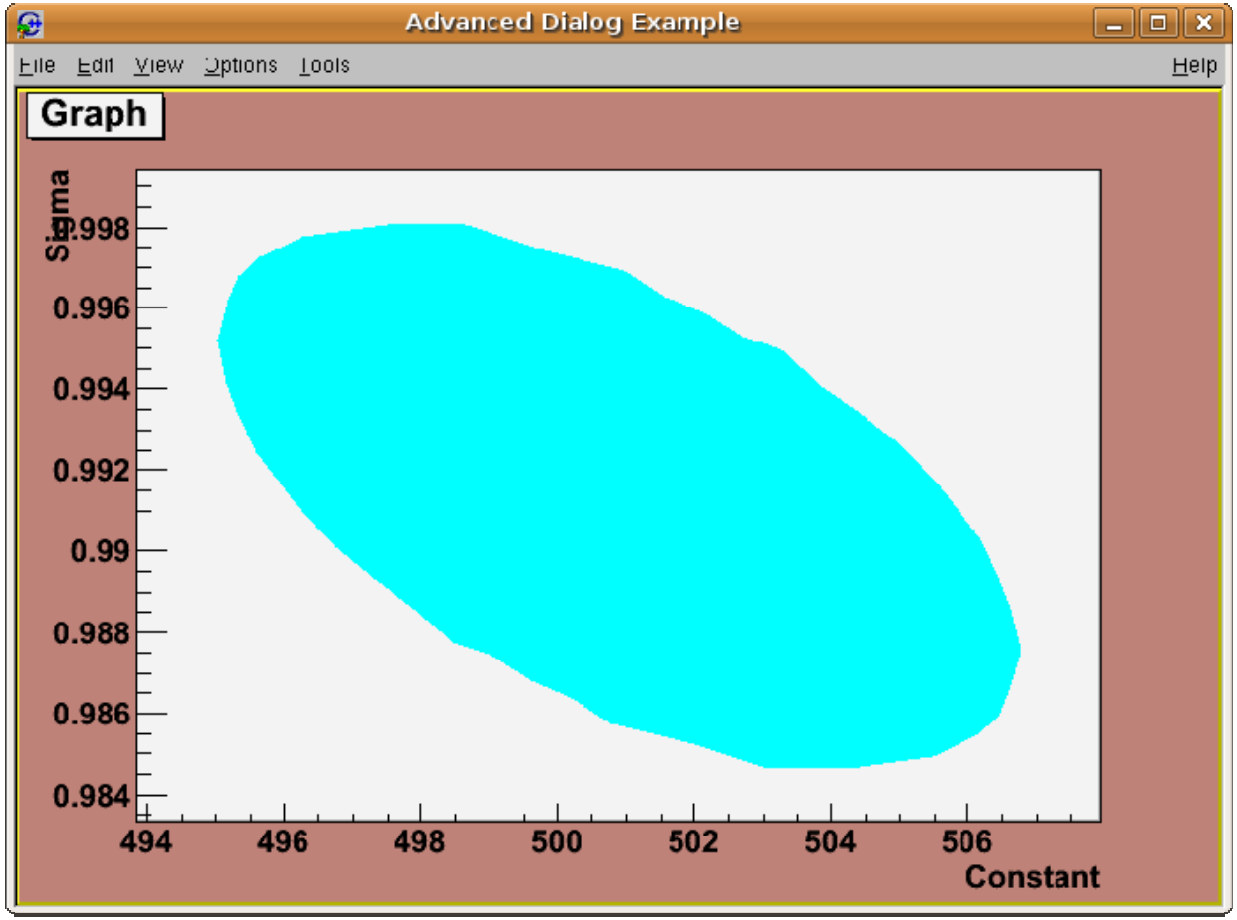

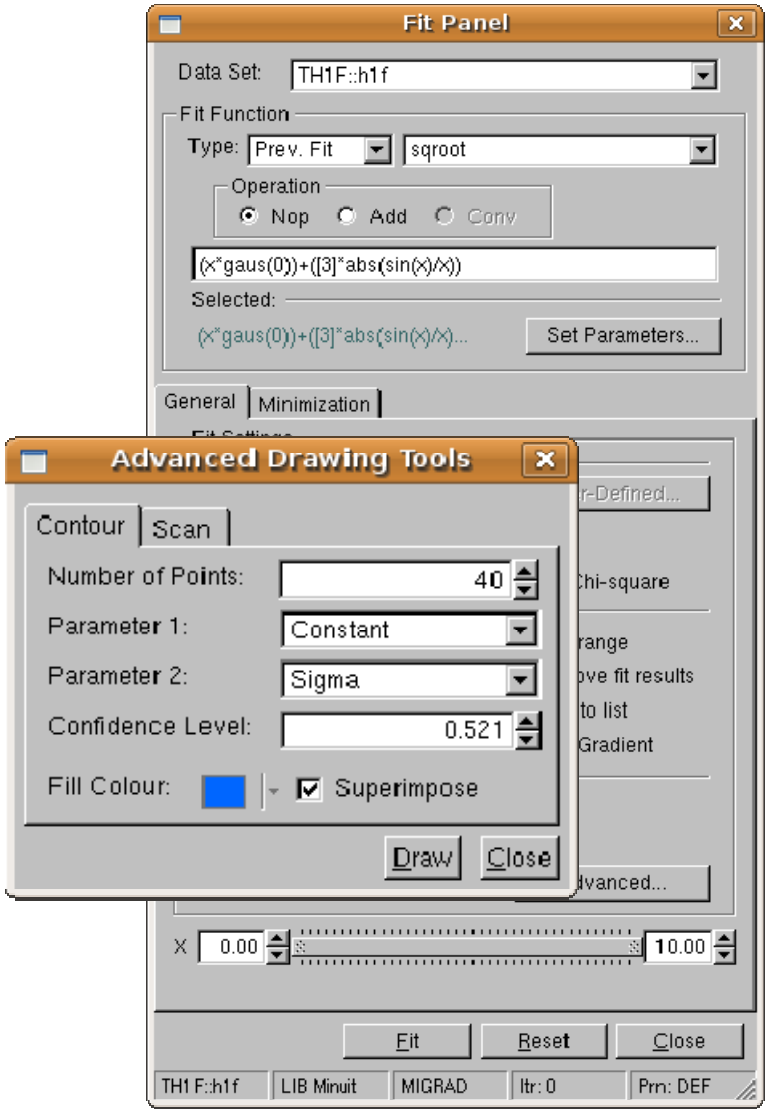

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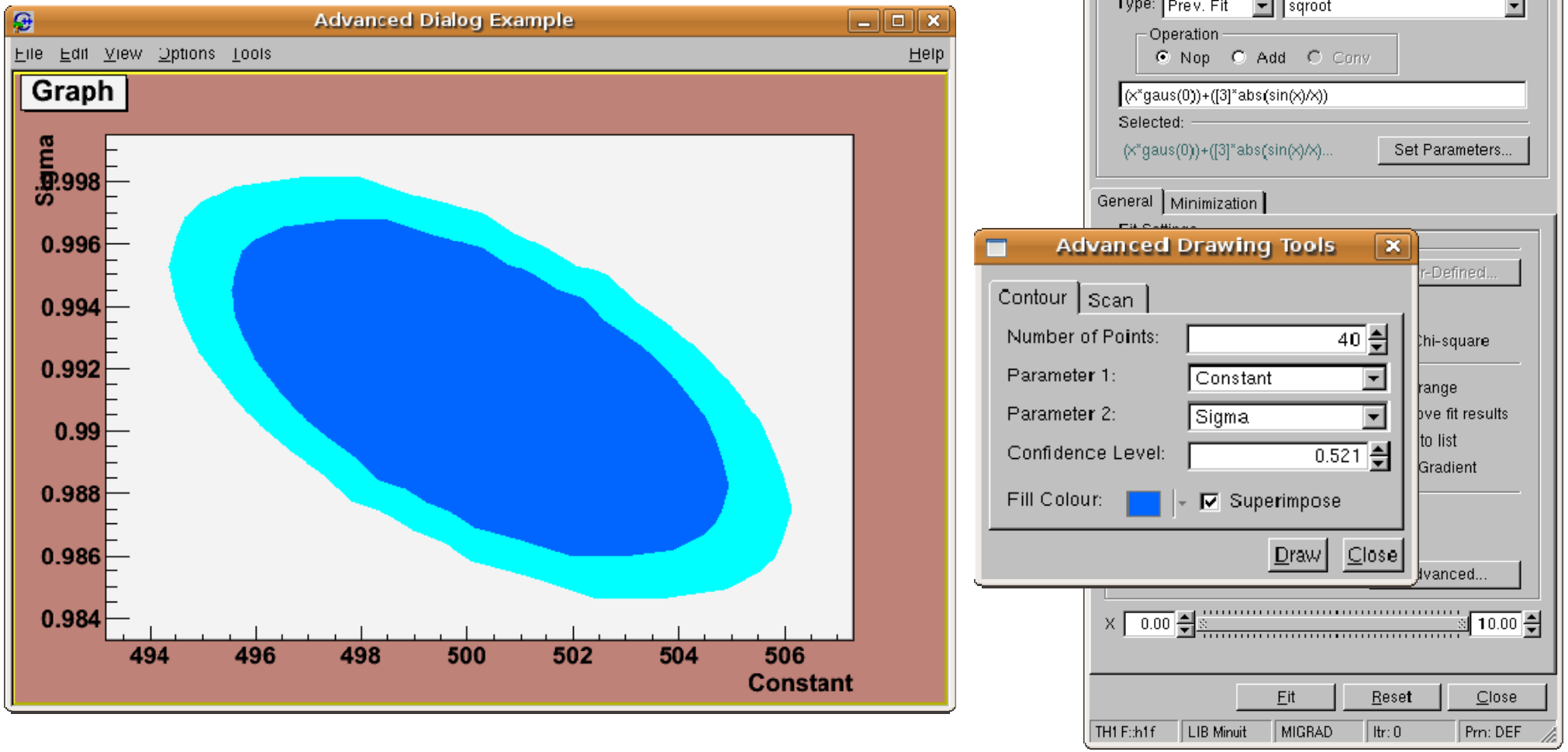
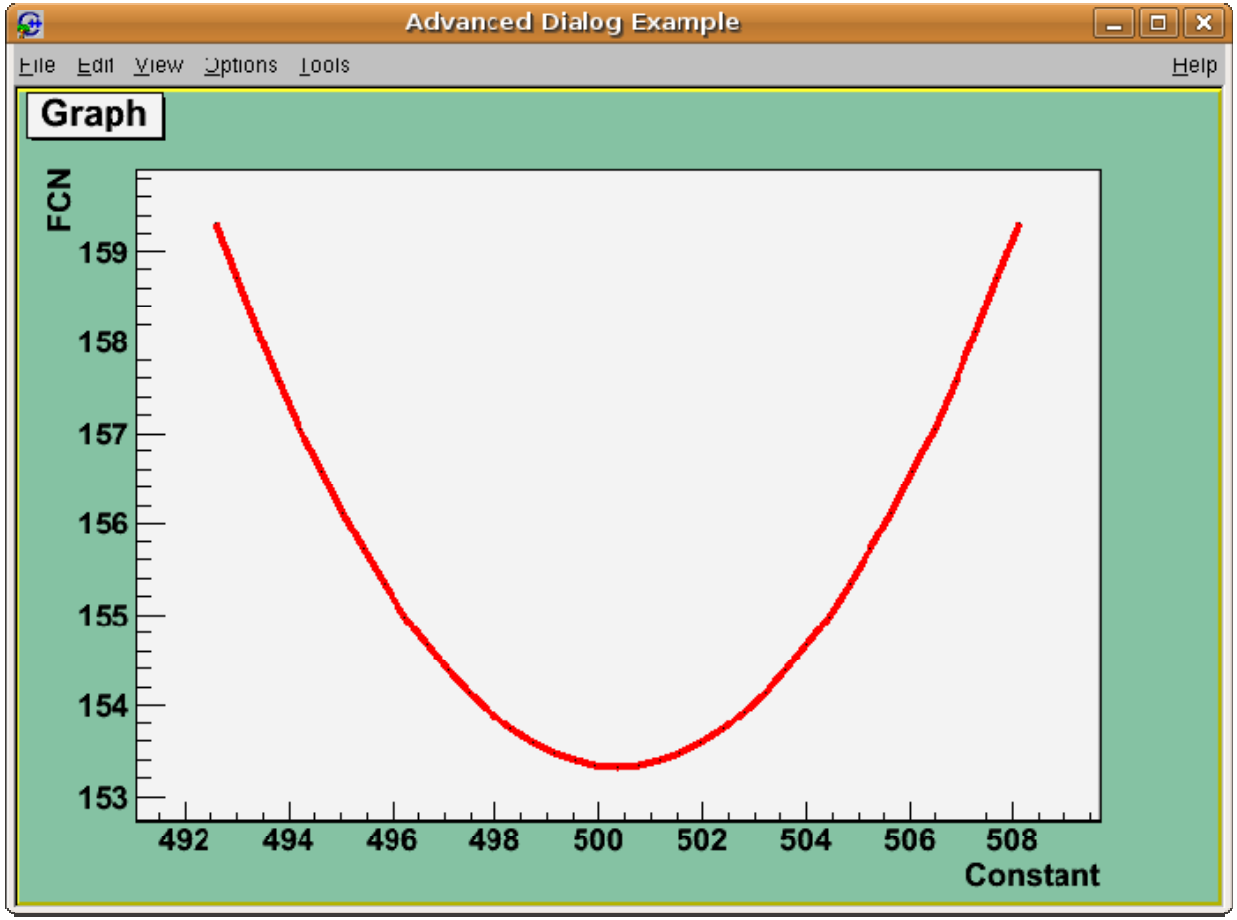
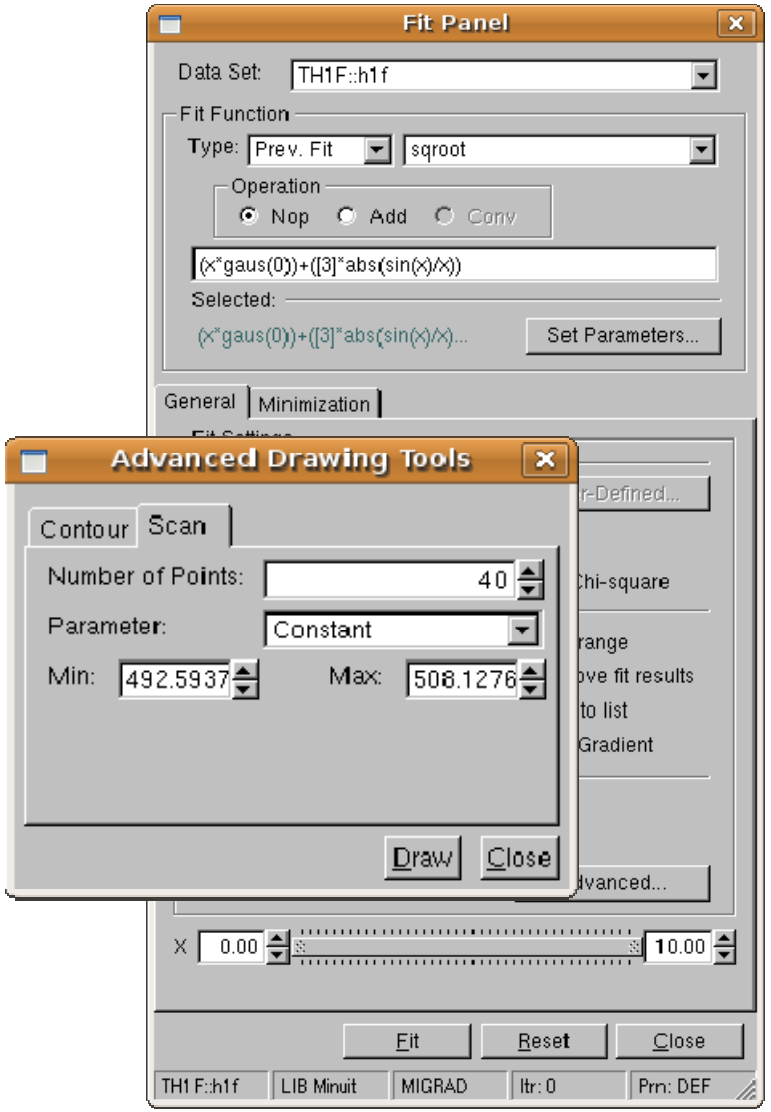


Advanced Options

Advanced drawing options from GUI

- Scan plot of likelihood

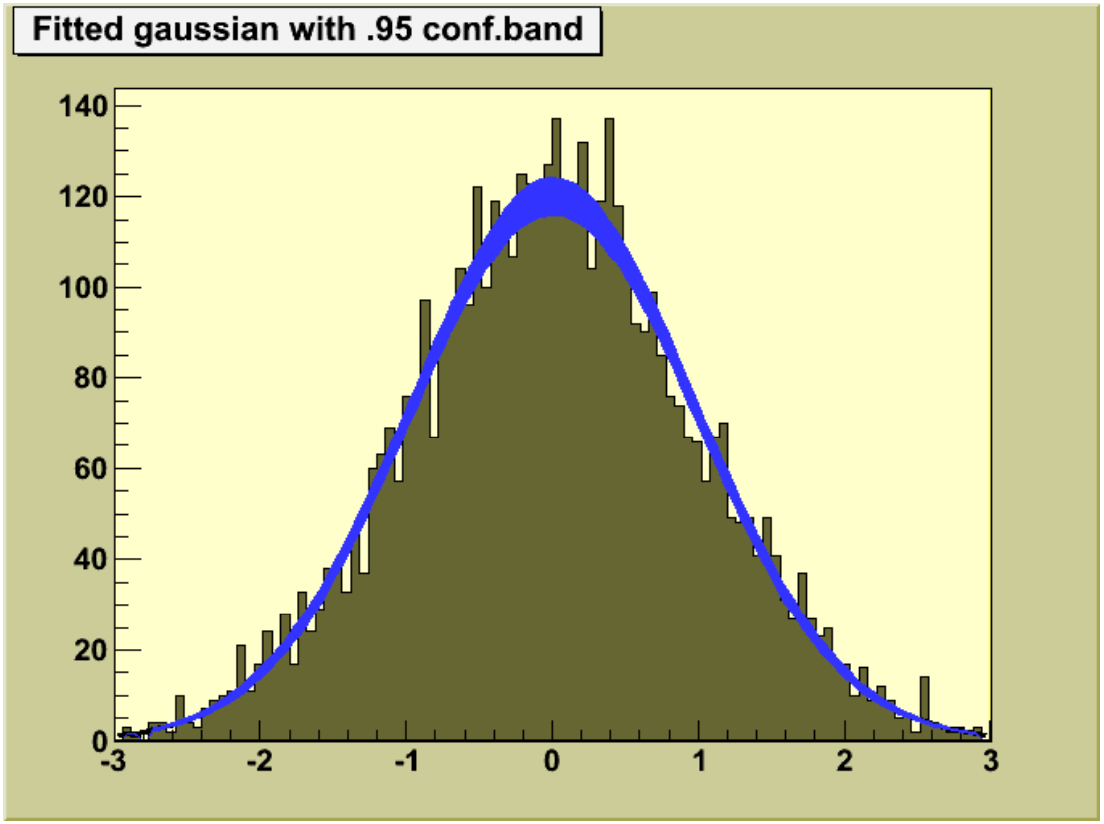


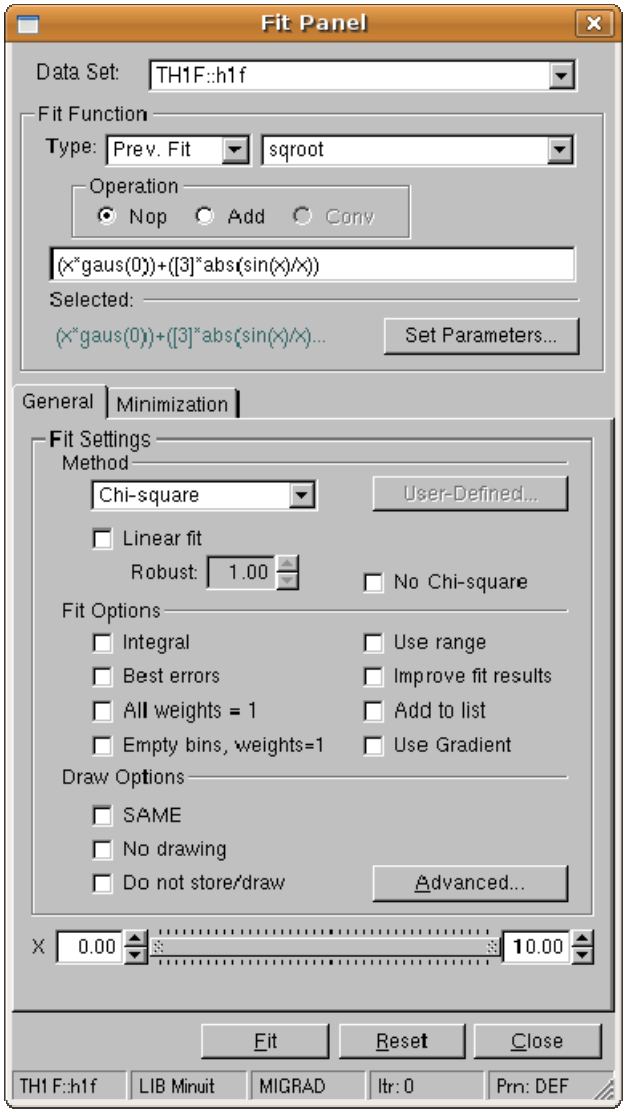


Advanced Options

Advanced drawing options from GUI

- Confidence Levels of fit function





Future Work & Conclusions

Future Improvements:

- Integration of the RooFit Functionality
- Parallelization interface
  - Control the number of threads

Conclusions:

- The fit panel has been widely re-engineered:
- Support more classes and methods
- Extra functionality (Advance graphics, etc)
- Waiting for user's feedback

Demo

Questions?