

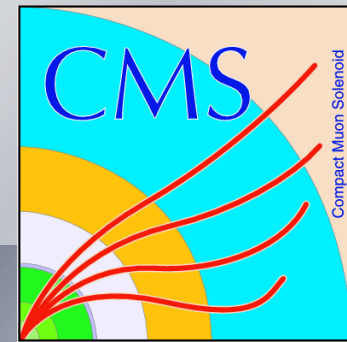


Introduction to Root program:L2

Presented by

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CINT Extensions to C++

1. Declaration can be omitted

```
f = new TFile("Example.root")
```

2. "." notation rather than "->"

```
f.ls()
```

3. Search for an object by its name

```
TH1F *smallHisto = new TH1F  
    ("small", "fPx 100", 100, -5, 5);  
small->Draw();
```

Warning: These will not work in compiled code!



CINT Commands

- `[expression]` evaluates the expression

```
root[3] 3*4  
(int)12
```
- `.files` show loaded source files
- `.class [name]` show class definition
- `.g` prints all objects in the root session
- `.ls` ls on current directory
- `.pwd` list the current directory, canvas, and style.

Opening and Inspecting ROOT Histograms Saved in Files

To inspect your ROOT histogram enter:

```
TFile f("myHistogram.root");
```

This will load the contents of the root file myHistogram.root into a temporary file in your ROOT session called "f".

To look at the contents of this file, enter:

```
f.ls();
```

You should see a response like:

```
TFile** myHistogram.root    Created for you by RooTupleManager
TFile*  myHistogram.root    Created for you by RooTupleManager
KEY:    TH1F h1d1;1         MC reco abs mtm difference
KEY:    TH1F h1d2;1         Reco track momentum
KEY:    TH1F h1d3;1         Tracks per Event
KEY:    TH1F h1d4;1         Momentum
KEY:    TH1F h1d5;1         TagInspector Status
```

you can add entries to bins in the histogram and redraw the output

when you redraw the file:

```
h1d4.Fill(2,4);
h1d4.Draw();
```

Scripts Examples

- Un-named Script: hello.C

```
{  
  cout << "Hello" << endl;  
}
```

- Named Script:say.C

```
void say(char * what = "Hello")  
{  
  cout << what << endl;  
}
```

- Executing the Named Script

```
root [3] .x say.C  
Hello  
root [4] .x say.C("Hi there")  
Hi there
```

Functions and Fitting

- Function Objects (TF1)
 - Three constructors for TF1
 - User Defined Functions
- Fitting
 - Fit()
 - Fitting with a user defined function
 - Fitting subranges and combining functions
 - Demonstration of background and signal function

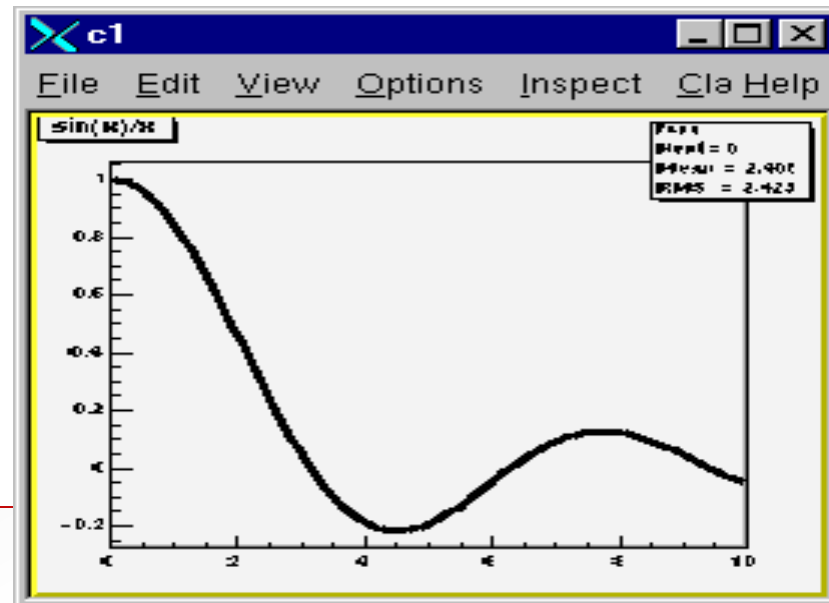
- Creating your own function objects
 - TF1, TF2, TF3
 - Three Signatures for the TF1 constructor

1. A C++ like expression using x with a fixed set of operators and functions defined in TFormula

```
TF1 *f1 = new TF1("f1", "sin(x)/x", 0, 10);
```

```
f1->Draw();
```

```
TF1 *f2 = new TF1("f2", "f1 * 2", 0, 10);
```



2. Same as the previous TF1 with Parameters

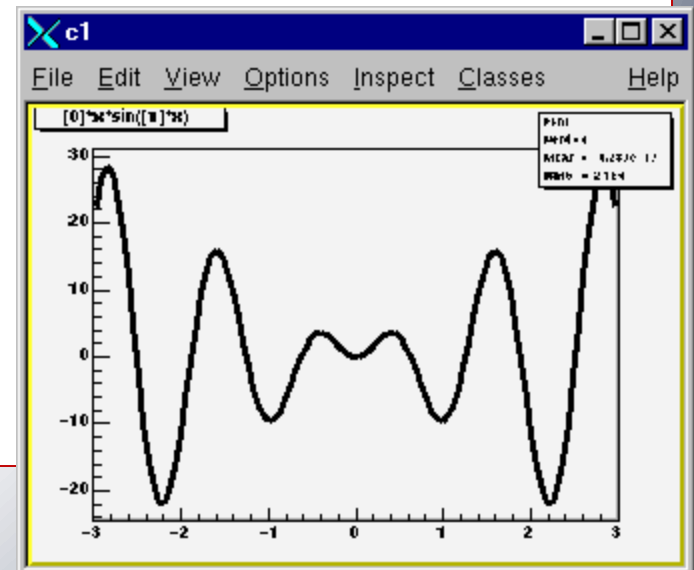
Call the constructor with parameter indices

```
TF1 *f1 = new TF1  
("f1", "[0] *x*sin( [1] *x)", -3, 3);
```

See TFormula for valid expressions

Set the parameters explicitly

```
f1->SetParameter(0, 10);  
f1->SetParameter(1, 5);  
f1->Draw();
```



Thanks!