root 的简单文件使用

1. 新建一个root文件，保存一个tree， hist

```
TFile * file = new TFile ("filetitle.root", "recreate"); //recreate 新文件
TTree * tree = new TTree ("treename", "treetitle");//定义tree
double x;
double y;
double p[4];

//tree
tree->Branch("x", &x, "x/D");
tree->Branch("y", &y, "y/D");
tree->Branch("momentum", p, "momentum[4]/D");

TH1F * hist = new TH1F ("histname", "histtitle", 100, -1,1);

TRandom3 * ran = new TRandom3();

for (int i = 0; i<100; i++){
  x = ran->Rndm();
  y = ran->Gaus();
  p[0] = ran->Rndm();
  p[1] = ran->Rndm();
  p[2] = ran->Rndm();
  p[3] = sqrt(p[0]**2 + p[1]**2 + p[2]**2 + 0.139**2);

  hist->Fill(y);
}
hist->Write();//保存
tree->Write();//保存
file->Close();//关文件

```

2. 打开一个root文件，读一个tree，hist

```
TFile * file = new TFile ("filetitle.root");

TTree * tree = (TTree*) file->Get("treename");

tree->Print();

TH1F * hist = (TH1F*) file->Get("histname");

TCanvas * can = new TCanvas ("canname", "cantitle", 800. 600);

hist->Draw();

double x;
double y;
double p[4];
```

```
16
17 tree->SetBranchAddress("x", &x);
18 tree->SetBranchAddress("y", &y);
19 tree->SetBranchAddress("momentum", p);
20
21 int n = tree->GetEntries();
22
23 for (int i = 0; i< n; i++){
24   tree->GetEntry(i);
25   cout<<x<<endl;
26   cout<<y<<endl;
27   for (int j = 0; j< 4; j++){
28     cout<<p[i]<<"t";
29   }
30   cout<<endl;
31 }
32
```