Subject: Reading a tree HELP!
Posted by Mamen on Thu, 22 Jan 2015 14:31:27 GMT
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Hello everybody!

Sorry for asking stupid questions, but I am now facing a TTree with a new structure for me and I am not sure how to read it.
The output comes from an event generator, and I just want to compare my results with some plots given in a paper.
The event generator generates the process pe->p'e' gamma (where e can be a positron or an electron).
My objective would be to be able to plot for example (Phi_e - Phi_gamma) or M_e-gamma(invariant mass), but right now I have only access to Px, Py and Pz of all particles at once or cutting on the PdgCode.
I include my root file, so you can have a look to the exact structure.

I'm trying the following:

```
int size;
//  int fPdgCode[10];

data->SetBranchAddress("Npart", &size);
//data->SetBranchAddress("Particles.fPdgCode", &fPdgCode);

// double branchPz, branchPy;
// data->SetBranchAddress("Particles.fPz", &branchPz);
// data->SetBranchAddress("Particles.fPy", &branchPy);

// double ElectronPhi[5000], GammaPhi[5000];

// double PhiValue=0;

int entries=data->GetEntries();
cout<<entries<<endl;
int w=0;
int k=0;
for ( k=0; k<entries; k++)
    {
      data->GetEntry(k);
      cout << k <<endl;
      cout<< w<< endl;
      for(w=0; w<size; w++)
 {
   cout<< "    "  <<w << endl;
   //  //    if (branchCode[w]==11)
   // {
   // //      ElectronPhi[k]=atan(branchPy[w]/branchPz[w]);
   //    }
   // //  if(branchCode[w]==22)
   // //    {
```

```
  // //      GammaPhi[k]=atan(branchPy[w]/branchPz[w]);
  // //    }
}
    //     Delta_phi->Fill(ElectronPhi[k]-GammaPhi[k]);
   }
```

Many lines are commented out because I get "break segmentation violation" if they are not commented. I actually don't know how to do the loop over the particles in each event. Any idea?
The next step for me would be to get the PidCode of each particle, to be able to distinguish between electron_phi and gamma_phi, but when I uncomment just the lines to create the branch to PdgCode I get the break segmentation violation. I also tried addressing to an array or not, i.e. "int fPdgCode[10];" or "int fPdgCode;".

Any help there?
Thanks a lot in advance!!! Any comment will be welcomed!!!

Cheers,
Mamen

File Attachments

1) data_ArticleTest_QEDC_1.root, downloaded 523 times

Subject: Re: Reading a tree HELP!
Posted by asanchez on Thu, 22 Jan 2015 14:48:31 GMT
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Hi Mamaen,
here you are some lines as example how to get read of
the TParticle Info in a TTree .

```
 TFile *tf1 = new TFile("the file");
 TTree *data = (TTree*)tf1->Get("data");
TClonesArray* hit_array=new TClonesArray("TParticle",100);
data->SetBranchAddress("Particles",&hit_array);//Branch names

for (Int_t j=0; j<data->GetEntries(); j++)
  {
   // if ((j)%100000==0)cout <<"evt: "<<j<<endl;

    data->GetEntry(j); // Loop over particles in TClonesArray

    for (Int_t iPart=0; iPart < nParts; iPart++) {

      TParticle* part = (TParticle*) hit_array->At(iPart);
      Int_t pdgType = part->GetPdgCode();
```

```
//you can use the member function of TPArticle to get the kinematic information

TLorentzVector lv1;

part->Momentum(lv1);

TVector3 v1;

v1= lv1.Vect();


// Total momentum

Double_t P;

P = part->P();

// theta

Double_t theta;

theta = part->Theta();


}

}
```

Subject: Re: Reading a tree HELP!
Posted by Ralf Kliemt on Thu, 22 Jan 2015 14:54:31 GMT
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Hi Mamen,

TTree has the opportunity to directly plot distributions from either the root shell or the TreeViewer.

Here an example:

```
TFile* file0=new TFile("myfile.root","READ");
TTree* tree = (TTree*)file0->Get("myBranchName");
int nEntries;
nEntries = tree->Draw("myVariable","myCutVariable>3.5");
```

You can print several expressions and opt for combined (use &&) cuts. See
https://root.cern.ch/root/htmldoc/TTree.html#TTree:Draw@2
for more details.

Cheers
Ralf

Subject: Re: Reading a tree HELP!
Posted by Mamen on Thu, 22 Jan 2015 15:10:27 GMT
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Thank you Ralf,

I already knew this way, unfortunately I need to plot a combination of different variables, but for each of them I need to apply different cuts, so this way is not usable for this particular case.
I mean, it would be something like:

data->Draw("atan(Py/Pz) - atan(Py/Pz)", "cuts"...) for which the first Py and Pz needs a cut on PdgCode==11 and the second pair a cut on PdgCode==22...

If this is possible, could you give an explicit example?, please.

Thanks again for your help

Cheers!
Mamen

Subject: Re: Reading a tree HELP!
Posted by Mamen on Thu, 22 Jan 2015 17:08:19 GMT
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Thank you, Alicia!

I tried and your solution works

Cheers!
Mamen

Subject: Re: Reading a tree HELP!
Posted by asanchez on Thu, 22 Jan 2015 23:13:10 GMT
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Hi Mamen,
me congratula

cheers Alicia

Subject: Re: Reading a tree HELP!
Posted by Ralf Kliemt on Fri, 23 Jan 2015 08:40:55 GMT
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Hi Mamen,

You're right, when you have an array of particles from one event it's tricky. I believe this is not possible to formulate in a TFormula style since you need to refer to one element of the TClonesArray for cutting. The explicit loop by Alicia is the way to , go, then.

Cheers
Ralf