GRUG, Sept. 6, 2001



ROOT Feature of the Week

This week's episode: TEventList



- A ROOT TEventList is a list of event numbers.
- The TEventList is used to constrain the events used in processing - such as histogram creation.
- This is clearly useful when dealing with large files.
- The RootAnalysis package, contains a simple, generic macro called *createEventList()*. It is located in the utilityMacros directory.



Simple Example

```
root [0] TFile f("backgndavgpdr100000TUP0494.root")
root [1] TTree *t = (TTree*)f->Get("PDR/t1")
root [2] t->GetEntries()
(const Stat_t)3.441800000000000e+004
root [3] t->Draw(">elist", "TKR_No_Tracks > 0")
(Int_t)13485
root [4] elist->GetN()
(const Int_t)13485
root [5] t->SetEventList(elist)
root [6] t->Draw("ACD_TileCount")
root [7] t->SetEventList(0)
root [8] t->Draw("ACD_TileCount")
```

Translation:

We opened the file, and accessed the TTree. Checked the number of entries in the TTree. Next, we created an TEventList, where we use TKR_No_Tracks > 0 as our selection criteria. We set our TTree, to use the TEventList, and then create a histogram of the ACD_TileCount, using only those events in the TEventList.

Next we reset our TTree, to use all of its events, and redraw the ACD_TileCount histogram.



Resulting Histograms







- What about more complex TTrees like the digi and reconstruction ROOT TTrees?
- In this case, we use an event loop to find the events • that satisfy our criteria.

```
TFile *f = new TFile("digiRootFile.root");
TTree *t = (TTree*)f->Get("T");
DigiEvent *evt = new DigiEvent();
t->SetBranchAddress("DigiEvent", &evt);
TEventList *elist = new TEventList();
UInt t numEvents = t->GetEntries();
UInt ti;
for (i = 0; i < numEvents; i++)
  t->GetEvent(i);
  if ((evt->GetAcdTile(1000))->GetPulseHeight() > thresh) {
   elist->Enter(i);
  evt->Clean();
```

- // open the ROOT file
- // Access the Digi ROOT Tree
- // Create a DigiEvent object
- // associate the DigiEvent variable with the TTree
- // Create a new, empty TEventList
- // Find the number of events in the Ttree

```
// event loop
// Retrieve event number i
```

// Enter this event number into our TEventList

// Clear the DigiEvent variable