Subject: analysis of multiple files
Posted by Dmitry Khaneft on Wed, 06 Jun 2012 14:02:06 GMT
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Dear all,

I want to perform mixed analysis of my signal and background files. I have 2 sets of sim/digi/reco/pid/par files. I looked into the FairRunAna code and as I understood I should use following functions

```
  // *** the files coming from the simulation
  TString inSimFile  = "./data/epem_mom3.3_gegm0.0_seed1001sim.root"; // this file contains the MC truth
  TString inRecoFile = "./data/epem_mom3.3_gegm0.0_seed1001reco.root";
  TString inPidFile  = "./data/epem_mom3.3_gegm0.0_seed1001pid.root"; // this file contains the PndPidCandidates
  //TString inParFile  = "./data/epem_mom3.3_gegm0.0_seed1001params.root";

  TString inSimFile_bg  = "./data/pipi_mom3.3_costheta0.9_seed10000sim.root"; // this file contains the MC truth
  TString inRecoFile_bg = "./data/pipi_mom3.3_costheta0.9_seed10000reco.root";
  TString inPidFile_bg  = "./data/pipi_mom3.3_costheta0.9_seed10000pid.root"; // this file contains the PndPidCandidates
  //TString inParFile_bg  = "./data/pipi_mom3.3_costheta0.9_seed10000params.root";

  // *** initialization
  FairRunAna* fRun = new FairRunAna();
  FairRuntimeDb* rtdb = fRun->GetRuntimeDb();
  // *** add signal files
  fRun->SetInputFile(inSimFile);
  fRun->AddFriend(inPidFile);
  fRun->AddFriend(inRecoFile);
  // *** add background files
  fRun->SetBackgroundFile(inSimFile_bg);
  fRun->AddBackgroundFile(inPidFile_bg);
  fRun->AddBackgroundFile(inRecoFile_bg);
```

and for parameter files I did following

```
  TFile *file_sig = new TFile("./data/epem_mom3.3_gegm0.0_seed1001params.root","READ");
  TFile *file_bg = new TFile("./data/pipi_mom3.3_costheta0.9_seed10000params.root","READ");

  TList *list = new TList();
  list->Add(file_sig);
  list->Add(file_bg);

  FairParRootFileIo* parIO = new FairParRootFileIo();
  parIO->open(list);
```

rtdb->setFirstInput(parIO);

the problem is that I have no entries in the analysis loop after this.

What is wrong in my code?

Also, what should I do if I have multiple signal and background events?

Thanks in advance,
Dmitry

Subject: Re: analysis of multiple files
Posted by StefanoSpataro on Wed, 06 Jun 2012 18:53:28 GMT
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Hi,
I am not expert on such code, Mohammad could comment, but if I remember well you should first launch your simulation for signal and background separately, and after at the digitization level you merge signal and background. At the digi level, not after pid.
Maybe this is your problem. Just try with a small bunch of event.

Subject: Re: analysis of multiple files
Posted by Dmitry Khaneft on Fri, 08 Jun 2012 08:52:37 GMT
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Ok. I think I will be happy if someone could help me with the second question.

What should I do if I have multiple sim/reco/pid/par files? Before I used TChain to process multiple files as one but FairRunAna class needs TString.

Subject: Re: analysis of multiple files
Posted by Mohammad Al-Turany on Fri, 08 Jun 2012 18:07:04 GMT
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Hi,

The signal and background are mixed at digitization level, and when you do that you have to use:

FairRunAna::SetSignalFile(TString name, UInt_t identifier)

you can add as many signals as you like as long as they have different identifiers, if you add two different files with the same identifier it will be simply chained.

FairRunAna::SetBackgroundFile(TString name)

FairRunAna::AddBackgroundFile(TString name)

This will set the background file and chain the added files.

In fact your code should exit immediately when you call "fRun->SetBackgroundFile(inSimFile_bg);" but it is a bug which we should correct!

regards,

Mohammad

Subject: Re: analysis of multiple files
Posted by Dmitry Khaneft on Mon, 11 Jun 2012 12:42:26 GMT
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Mohammad Al-Turany wrote on Fri, 08 June 2012 20:07Hi,

The signal and background are mixed at digitization level, and when you do that you have to use:

FairRunAna::SetSignalFile(TString name, UInt_t identifier)

you can add as many signals as you like as long as they have different identifiers, if you add two different files with the same identifier it will be simply chained.

regards,

Mohammad

Thanks for the answer but it works only if mixed mode was used. Can I chain normal files without mixing?

cheers,
Dmitry

Subject: Re: analysis of multiple files
Posted by Mohammad Al-Turany on Mon, 11 Jun 2012 18:07:50 GMT
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Hi,

Yes, you need to use:

Set the input file by name

```
void       FairRunAna::SetInputFile(TString fname);
```

Add a file to input chain

void FairRunAna::AddFile(TString name);

Cheers,

Mohammad

Subject: Re: analysis of multiple files
Posted by Dmitry Khaneft on Tue, 12 Jun 2012 08:56:33 GMT
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Thanks it works.

Subject: Re: analysis of multiple files
Posted by Simon Reiter on Thu, 23 May 2013 11:41:31 GMT
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Hi,

I simulated my background with 2000 events and 100 times till now. Now I want to merge them into one histogram. Do I really need to add all 400 files (sim, simparams, reco and pid) into the analysis code? Because the sim-file is about 2GB.

The second question is: Do I only need the mixing mode for simulating the dead time of the detectors or are there other benefits?

Thanks so far for the tutorial

Subject: Re: analysis of multiple files
Posted by StefanoSpataro on Thu, 23 May 2013 11:54:24 GMT
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Hi,
The best way to analyze multiple files is to run analysis on each file, and at the end to merge the final histograms/ntuples with hadd command.

About the second question, I admit I have not understood it very well. Could you please be more explicit?

Subject: Re: analysis of multiple files
Posted by Simon Reiter on Thu, 23 May 2013 12:52:49 GMT

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I just want to know what the advantage of the mixing method over the hadd methode is.
The only thing I noticed was the dead time of the detector if multiple particles hit the same part of the detector.

Subject: Re: analysis of multiple files
Posted by StefanoSpataro on Thu, 23 May 2013 12:54:15 GMT
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What do you call "the mixing method"?

Subject: Re: analysis of multiple files
Posted by Simon Reiter on Thu, 23 May 2013 12:56:35 GMT
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Oh sry, I'm talking about mixing/merging the signal simulation and background simulation.

Subject: Re: analysis of multiple files
Posted by StefanoSpataro on Thu, 23 May 2013 13:16:48 GMT
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How do you do such merging? We have several ways implemented.
There is the tracking mixing, provided by Gianluigi' code. There is the event mixing from the run, Mohammad can tell you more. You could add two different generators, which is messy. You could add only the final histograms, assuming that signal events and background events are well separated.
Can you please describe what exactly you are doing, and for which purpose?

Subject: Re: analysis of multiple files
Posted by Simon Reiter on Thu, 23 May 2013 13:24:44 GMT
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I'm just talking about the mixed analysis in the first post!
And I only want to know what the advantage over merging the histograms is.

Sry for confusing..

Subject: Re: analysis of multiple files
Posted by StefanoSpataro on Thu, 23 May 2013 13:43:35 GMT
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Sorry but I have never used it. Most probably Mohammad coud tell you something about.
But I believe that it embeds signal events inside the bg events. This means that the same

event has both signal hits and bg hits, then tracking is more difficult and combinatorial could be higher. If you add the histograms at the end you assume that signal and bg are well separated, which is a bit less realistic.
I suggest to send a mail to Mohammad.

Subject: Re: analysis of multiple files
Posted by Simon Reiter on Thu, 23 May 2013 13:47:29 GMT
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I expected the same, but for my first runs, adding the histograms should do it. Thanks

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