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# Configurable Analysis Ntuple Information

NOTE: This page is outdated. To see the latest ntuples go to the site <http://positron.physics.ucsb.edu/cfA/form.html>, which lists all the ntuples produced.

## Goals of this page

- Provide location of ntuples that have been produced
- Provide documentation on ntuples content
- Provide a test skeleton macro to run over the samples
- Provide a recipe to produce ntuples yourself

# Contents

# Introduction

The ConfigurableAnalysis tool allows you to easily produce an ntuple from the output of the PAT. These ntuples are not supported by CMS and do not have any official status. This page describes the ntuples that have been produced so far.

# Ntuples in 1.6.12

## Input files for ntuples 1.6.12

Most of the ConfigurableAnalysis ntuples in 1.6.12 are produced from input files that are described at <https://twiki.cern.ch/twiki/bin/view/CMS/SusyCaf>. The input files for ntuples created from this site are:

- CSA07-CSA07Muon-Chowder-P1-PDMuon-Skims6 (4.5 M events)
- CSA07-CSA07Muon-Chowder-P1-PDMuon-Skims6 (40k events)
- CSA07-CSA07Muon-Chowder-P1-PDMuon-Skims6 (1.8 M events)
- LM1, LM2, LM3, LM4, LM6, LM8, and LM9 (all LMs have ~100k events)

The ntuples produced from input files not described at the above link are:

- /WW\_incl/CMSSW\_1\_6\_7-CSA07-1196178448/RECO (800k events)
- /WZ\_incl/CMSSW\_1\_6\_7-CSA07-1195629996/RECO (350k events)
- /WZ\_incl/CMSSW\_1\_6\_7-CSA07-1195629996/RECO (350k events)

## Location of ntuples

The muon-skimmed chowder trees are located on castor at CERN and they are ~25 GB in total. There are 4,477,207 events total in these 6 files:

- /castor/cern.ch/user/r/rebassoo/CSAMuonChowderCombinedWCSA/MuonChowderNtupleCombined1.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonChowderCombinedWCSA/MuonChowderNtupleCombined2.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonChowderCombinedWCSA/MuonChowderNtupleCombined3.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonChowderCombinedWCSA/MuonChowderNtupleCombined4.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonChowderCombinedWCSA/MuonChowderNtupleCombined5.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonChowderCombinedWCSA/MuonChowderNtupleCombined6.root

The muon-skimmed gumbo tree is located on castor at CERN and this file is ~700 MB. There are 38942 events in this file

- /castor/cern.ch/user/r/rebassoo/CSAMuonGumboCombinedWCSA/MuonGumboNtupleCombined.root

The muon-skimmed stew trees are located on castor at CERN and they are ~10 GB in total. There is 1803622 events total in these 12 files

- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined1.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined2.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined3.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined4.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined5.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined6.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined7.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined8.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined9.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined10.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined11.root
- /castor/cern.ch/user/r/rebassoo/CSAMuonStewCombinedWCSA/MuonStewNtupleCombined12.root

The LM files are all about 1-2 GB and at fermilab at:

- /uscms\_data/d1/rebassoo/LM1SusyTree/job/LM1\_SUSY\_Tree.root
- /uscms\_data/d1/rebassoo/LM2SusyTree/job/LM2\_SUSY\_Tree.root
- /uscms\_data/d1/rebassoo/LM3SusyTree/job/LM3\_SUSY\_Tree.root
- /uscms\_data/d1/rebassoo/LM4SusyTree/job/LM4\_SUSY\_Tree.root
- /uscms\_data/d1/rebassoo/LM6SusyTree/job/LM6\_SUSY\_Tree.root
- /uscms\_data/d1/rebassoo/LM8SusyTree/job/LM8\_SUSY\_Tree.root
- /uscms\_data/d1/rebassoo/LM9SusyTree/job/LM9\_SUSY\_Tree.root

For the di-boson samples, they are located on castor at CERN at:

- /castor/cern.ch/user/r/rebassoo/WW\_incl\_Combined/WW\_incl\_Combined1.root
- /castor/cern.ch/user/r/rebassoo/WW\_incl\_Combined/WW\_incl\_Combined2.root
- /castor/cern.ch/user/r/rebassoo/WW\_incl\_Combined/WW\_incl\_Combined3.root
- /castor/cern.ch/user/r/rebassoo/WW\_incl\_Combined/WW\_incl\_Combined4.root
- /castor/cern.ch/user/r/rebassoo/WZ\_incl\_Combined/WZ\_incl\_Combined1.root
- /castor/cern.ch/user/r/rebassoo/WZ\_incl\_Combined/WZ\_incl\_Combined2.root
- /castor/cern.ch/user/r/rebassoo/ZZ\_incl\_Combined/ZZInclNtupleCombined.root

## Content of ntuples

The table

[http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/UCSB\\_SUSY\\_ROOT\\_Tree\\_Content\\_100](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/UCSB_SUSY_ROOT_Tree_Content_100) gives an explicit description of the ntuple content. This table identifies all the collections, classes, and member data used in the ntuple.

## Macro to run on ntuples

I have tried to include a root macro that will help first time users with the ntuples. First save all the files below to the same directory:

- <http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/PublicScript.h>
- <http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/PublicScript.C>
- <http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/loader.C>
- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/chain\\_Chowder.C](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/chain_Chowder.C)
- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/running\\_on\\_background.C](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/running_on_background.C)

To run the macro simply copy all the attached .C and .h files to the same directory and do:

```
root [0] .x running_on_background.C
```

You can open this file to see exactly what it is doing, but for it to work you will need to make changes to the file chain\_chowder.C before the macro will run. You need to change the location in this file to wherever the ntuples you are running on are located. The file PublicScript.C is where you put all your analysis code. Right now it just plots muon pt and CSA07 id and saves them in a root file.

# Ntuples in 2.1.11

## Fixes/Changes in ntuple from 1.6.12

The ntuples in 2.1.11 have recovered the Monte Carlo mother information (in 1.6.12 this information was corrupted for the input files ran on). Currently the ntuples in 2.1.11 have all the same contents as those in 1.6.12, though some quantities have been removed or changed due to the release difference. In particular, the L1 trigger information has been moved to eventV from eventB.

## Input files for ntuples 2.1.11

There is a summer LM1 ntuple that has been produced from:

- /SUSY\_LM1-sftsht/Summer08\_IDEAL\_V9\_v1/GEN-SIM-RECO

## Location of ntuples 2.1.11

The LM1 ntuple is located on castor at CERN at:

- /castor/cern.ch/user/r/rebassoo/SUSYLM1\_Combined/SUSYLM1Combined.root



## Ntuples in 2.2.3

We have successfully run the configurableAnalysis ntuple-maker in 2.2.3 with additional tags for the PAT specified at the SUSYPAT twiki. We have included more variables in the ntuple, such as all the lepton id information, and more muon information (see documentation below for specifics). From the summer08 samples we have produced ntuples for some of the LMs and ttbar. We will be producing more ntuples from the summer08 samples soon.

### Input files for ntuples 2.2.3

LM ntuples have been produced from:

- /SUSY\_LM1-sftsht/Summer08\_IDEAL\_V9\_AODSIM\_v1/AODSIM
- /SUSY\_LM2-sftsht/Summer08\_IDEAL\_V9\_AODSIM\_v1/AODSIM
- /SUSY\_LM3-sftsht/Summer08\_IDEAL\_V9\_AODSIM\_v1/AODSIM
- /SUSY\_LM5-sftsht/Summer08\_IDEAL\_V9\_AODSIM\_v1/AODSIM
- /SUSY\_LM7-sftsht/Summer08\_IDEAL\_V9\_AODSIM\_v1/AODSIM

Ttbar ntuples have been produced from tauola and madgraph samples:

- /TauolaTTbar/Summer08\_IDEAL\_V9\_AODSIM\_v1/AODSIM
- /TTJets-madgraph/Fall08\_IDEAL\_V9\_v2/GEN-SIM-RECO

### Location of ntuples 2.2.3

The LM ntuples (each ~200k events) are located on castor at CERN at:

- /castor/cern.ch/user/r/rebassoo/SUSYLM1\_2\_2\_3\_Combined.root
- /castor/cern.ch/user/r/rebassoo/SUSYLM2\_2\_2\_3\_Combined.root
- /castor/cern.ch/user/r/rebassoo/SUSYLM3\_2\_2\_3\_Combined.root
- /castor/cern.ch/user/r/rebassoo/SUSYLM5\_2\_2\_3\_Combined.root
- /castor/cern.ch/user/r/rebassoo/SUSYLM7\_2\_2\_3\_Combined.root

The Tauola ttbar ntuple (~150k events) is located at:

- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Combined\_Tauola.root

The Madgraph ttbar ntuples (~800K events total) are located at:

- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_1.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_2.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_3.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_4.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_5.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_6.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_7.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_8.root
- /castor/cern.ch/user/r/rebassoo/ttbar\_2\_2\_3\_Madgraph\_Combined/ttbar\_2\_2\_3\_Combined\_9.root

### Content of ntuples 2.2.3

The table

[http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/SUSY\\_ROOT\\_Tree\\_Content\\_2\\_2\\_3\\_Feb9](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/SUSY_ROOT_Tree_Content_2_2_3_Feb9) gives an explicit description of the ntuple content. This table identifies all the collections, classes, and member data used in the ntuple.

## Macro to run on ntuples 2.2.3

I have tried to include a root macro that will help first time users with the ntuples. First save all the files below to the same directory:

- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2\\_2\\_3/PublicScript.h](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2_2_3/PublicScript.h)
- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2\\_2\\_3/PublicScriptSimple.C](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2_2_3/PublicScriptSimple.C)
- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2\\_2\\_3/loader.C](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2_2_3/loader.C)
- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2\\_2\\_3/chain\\_LM1.C](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2_2_3/chain_LM1.C)
- [http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2\\_2\\_3/runningLM1.C](http://hep.ucsb.edu/people/rebassoo/ForConfigurableAnalysisNtupleTwiki/2_2_3/runningLM1.C)

To run the macro simply download all the .C and .h files above into the same directory and do:

```
root [0] .x runningLM1.C
```

You can open this file to see exactly what it is doing, but for it to work you will need to make changes to the file chain\_LM1.C before the macro will run. You need to change the location in this file to wherever the ntuples you are running on are located. The file PublicScriptSimple.C is where you put all your analysis code. Right now it just plots muon pt and saves it in a root file.

## Recipe to create ntuples yourself 2.2.3

You can create ntuples yourself in 2.2.3. This recipe will work on summer08/fall08 samples.

First set up your environment:

```
scramv1 p CMSSW CMSSW_2_2_3
cd CMSSW_2_2_3/src
cmsenv

#PAT specific tags from SUSYPAT twiki
addpkg PhysicsTools/PatAlgos V04-14-18
addpkg PhysicsTools/PatUtils V03-05-02
addpkg DataFormats/PatCandidates V03-18-04

#Need updated StringParser
cvs co -r V06-09-07 PhysicsTools/Utilities

#addition to the release tags for configurableAnalysis
addpkg PhysicsTools/RecoUtils
cvs co -r V00-01-03 PhysicsTools/RecoUtils/plugins
cvs co -r V07-03-21-00 PhysicsTools/UtilAlgos

#this is for the Pat cross cleaner
cvs co -rV00-03-01 -d SusyAnalysis/PatCrossCleaner UserCode/SusyAnalysis/PatCrossCleaner

#this is to get the configurableAnalysis tool
cvs co -r U00-02-00 -d Workspace/ConfigurableAnalysis UserCode/JRVlimant/cmssw/Workspace/ConfigurableAnalysis

scramv1 b
```

## WorkBookConfigurableAnalysisNtupler < CMSPublic < TWiki

Once you have the proper environment set up you can run the ntupler. To run the ntupler make sure the input file in testFromAOD\_cfg.py is correct, then do:

```
cd Workspace/ConfigurableAnalysis/python  
cmsRun testFromAOD_cfg.py
```

The configuration file testFromAOD\_cfg.py runs the ntupler and outputs the root file configurableAnalysis.root with the ntuples eventB and eventV in it. eventV has all the trigger information, and eventB has all the other variables.

If you want a different output file name besides configurableAnalysis.root revise Workspace/ConfigurableAnalysis/python/configurableAnalysis\_cff.py by changing the string name in the line:

```
fileName = cms.string('configurableAnalysis.root')
```

# Ntuples in 2.2.6

## Location, Content, macros and more for ntuples in 2.2.6

Look at the page <http://positron.physics.ucsb.edu/cfA/form.html> for the location, content, macros and more for these ntuples in 2.2.6. The ntuples in 2.2.6 are called version 2.

## Recipe for ntuple in 2.2.6

```
scramv1 p CMSSW CMSSW_2_2_6
cd CMSSW_2_2_6/src
cmsenv

#PAT specific tags from SUSYPAT twiki
addpkg PhysicsTools/PatAlgos V04-14-24
addpkg PhysicsTools/PatUtils V03-05-02
addpkg DataFormats/PatCandidates V03-18-07
addpkg CondFormats/JetMETObjects V01-08-02

#Need updated StringParser with bug fix to get ecalIsoDeposit and
hcalIsoDeposit energy
cvs co -r V06-09-07-01 PhysicsTools/Utilities

#addition to the release tags for configurableAnalysis
addpkg PhysicsTools/RecoUtils
cvs co -r V00-01-03 PhysicsTools/RecoUtils/plugins

#This is for tcMET
cvs co -r V02-05-00-20 RecoMET/METAlgorithms
cvs co -r V02-08-02-16 RecoMET/METProducers
cvs co -r V00-04-02-16 RecoMET/Configuration
cvs co -r V00-06-02-09 DataFormats/METReco

#this is for the Pat cross cleaner
cvs co -rV00-03-01 -d SusyAnalysis/PatCrossCleaner
UserCode/SusyAnalysis/PatCrossCleaner

#this is to get the configurableAnalysis tool
cvs co -r U00-08-00 -d Workspace/ConfigurableAnalysis
UserCode/JRVlimant/cmssw/WorkSpace/ConfigurableAnalysis

scramv1 b
```

Once you have the proper environment set up you can run the ntupler. To run the ntupler make sure the input file in `testFromAOD_cfg.py` is correct, then do:

```
cd Workspace/ConfigurableAnalysis/python
cmsRun testFromAOD_cfg.py
```

The configuration file `testFromAOD_cfg.py` runs the ntupler and outputs the root file `configurableAnalysis.root` with the ntuples `eventB` and `eventV` in it. `eventV` has all the trigger information, and `eventB` has all the other variables.

If you want a different output file name besides `configurableAnalysis.root` revise `Workspace/ConfigurableAnalysis/python/configurableAnalysis_cff.py` by changing the string name in the line:

```
fileName = cms.string('configurableAnalysis.root')
```

