

# MC-TESTER results for decays of particle $\tau^-$ (PDG code 15).

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## Results from **generator 1**.

Dataset: valid1.005107.pythia\_Wtauhad.evgen.EVNT.e337\_tid021559  
Testing tau- decays in W -> tau -> had

- From directory:  
/data/data2/atlas/users/ndavidso/testarea/14.1.0/MCTesterTool/share
- Total number of analyzed decays: 8220
- Number of decay channels found: 40

## Results from **generator 2**.

Dataset: mc12.005107.pythia\_Wtauhad.evgen.EVNT.v12000701  
Testing tau- decays in W -> tau -> had

- From directory:  
/data/data2/atlas/users/ndavidso/testarea/14.1.0/MCTesterTool/share
- Total number of analyzed decays: 149120
- Number of decay channels found: 40 + 18

## Found decay modes:

Decay channel	Branching Ratio $\pm$ Rough Errors		Max. shape dif. param.
	Generator #1	Generator #2	
$\tau^- \rightarrow \gamma \tau^-$	23.9903 $\pm$ 0.5402%	23.6548 $\pm$ 0.1259%	0.00000
$\tau^- \rightarrow \pi^- \nu_\tau$	11.9100 $\pm$ 0.3806%	6.4472 $\pm$ 0.0658%	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \nu_\tau$	10.6448 $\pm$ 0.3599%	12.9037 $\pm$ 0.0930%	0.00000
$\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$	10.1217 $\pm$ 0.3509%	13.1438 $\pm$ 0.0939%	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \nu_\tau$	5.0730 $\pm$ 0.2484%	7.0145 $\pm$ 0.0686%	0.00161
$\tau^- \rightarrow \pi^- \gamma \nu_\tau$	1.4842 $\pm$ 0.1344%	0.7283 $\pm$ 0.0221%	0.00000
$\tau^- \rightarrow \pi^- \pi^0 \pi^0 \pi^0 \nu_\tau$	1.0341 $\pm$ 0.1122%	1.5853 $\pm$ 0.0326%	0.01764
$\tau^- \rightarrow K^- \nu_\tau$	0.9124 $\pm$ 0.1054%	0.5070 $\pm$ 0.0184%	0.00000
$\tau^- \rightarrow \pi^- \pi^0 \gamma \nu_\tau$	0.6813 $\pm$ 0.0910%	0.6351 $\pm$ 0.0206%	0.00000
$\tau^- \rightarrow \pi^- \pi^0 \nu_\tau$	29.8905 $\pm$ 0.6030%	28.2122 $\pm$ 0.1375%	0.00318
$\tau^- \rightarrow \pi^- K_L^0 \nu_\tau$	0.5596 $\pm$ 0.0825%	0.5767 $\pm$ 0.0197%	0.00000
$\tau^- \rightarrow K^- \pi^0 \nu_\tau$	0.5474 $\pm$ 0.0816%	0.5573 $\pm$ 0.0193%	0.00000
$\tau^- \rightarrow K^- \pi^- \pi^+ \nu_\tau$	0.4866 $\pm$ 0.0769%	0.7383 $\pm$ 0.0223%	0.00000
$\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$	0.4623 $\pm$ 0.0750%	0.5546 $\pm$ 0.0193%	0.00000
$\tau^- \rightarrow K_S^0 \pi^- \pi^0 \nu_\tau$	0.3406 $\pm$ 0.0644%	0.4097 $\pm$ 0.0166%	0.00000
$\tau^- \rightarrow \pi^- K_L^0 \pi^0 \nu_\tau$	0.2920 $\pm$ 0.0596%	0.4044 $\pm$ 0.0165%	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \pi^0 \nu_\tau$	0.1946 $\pm$ 0.0487%	0.2293 $\pm$ 0.0124%	0.00000
$\tau^- \rightarrow K^- K^+ \pi^- \nu_\tau$	0.1825 $\pm$ 0.0471%	0.2119 $\pm$ 0.0119%	0.00000
$\tau^- \rightarrow K^- K_S^0 \pi^0 \nu_\tau$	0.1217 $\pm$ 0.0385%	0.1113 $\pm$ 0.0086%	0.00000
$\tau^- \rightarrow K^- K_L^0 \pi^0 \nu_\tau$	0.1095 $\pm$ 0.0365%	0.1348 $\pm$ 0.0095%	0.00000
$\tau^- \rightarrow \nu_\tau \bar{\nu}_\tau e^-$	0.0973 $\pm$ 0.0344%	0.0295 $\pm$ 0.0044%	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^+ \nu_\tau$	0.0852 $\pm$ 0.0322%	0.0832 $\pm$ 0.0075%	0.00000
$\tau^- \rightarrow K_S^0 \pi^- K_L^0 \nu_\tau$	0.0852 $\pm$ 0.0322%	0.1106 $\pm$ 0.0086%	0.00000
$\tau^- \rightarrow \nu_\tau \bar{\nu}_\tau \mu^-$	0.0852 $\pm$ 0.0322%	0.0389 $\pm$ 0.0051%	0.00000
$\tau^- \rightarrow \pi^- \pi^0 \gamma \gamma \nu_\tau$	0.0730 $\pm$ 0.0298%	0.1200 $\pm$ 0.0090%	0.00000
$\tau^- \rightarrow \pi^- \pi^0 \pi^0 \pi^0 \pi^0 \nu_\tau$	0.0730 $\pm$ 0.0298%	0.0751 $\pm$ 0.0071%	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \pi^0 \nu_\tau$	0.0608 $\pm$ 0.0272%	0.0811 $\pm$ 0.0074%	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \gamma \nu_\tau$	0.0487 $\pm$ 0.0243%	0.0288 $\pm$ 0.0044%	0.00827
$\tau^- \rightarrow K_S^0 K_S^0 \pi^- \nu_\tau$	0.0487 $\pm$ 0.0243%	0.0577 $\pm$ 0.0062%	0.00000
$\tau^- \rightarrow \pi^- \gamma \gamma \nu_\tau$	0.0487 $\pm$ 0.0243%	0.0382 $\pm$ 0.0051%	0.00000
$\tau^- \rightarrow K^- K_L^0 \nu_\tau$	0.0365 $\pm$ 0.0211%	0.0704 $\pm$ 0.0069%	0.00000
$\tau^- \rightarrow K^- K_S^0 \nu_\tau$	0.0365 $\pm$ 0.0211%	0.0691 $\pm$ 0.0068%	0.00000

$\tau^- \rightarrow K^- \pi^0 \pi^0 \nu_\tau$	$0.0365 \pm 0.0211\%$	$0.0664 \pm 0.0067\%$	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \gamma \nu_\tau$	$0.0365 \pm 0.0211\%$	$0.0597 \pm 0.0063\%$	0.00000
$\tau^- \rightarrow \pi^- \pi^- \pi^- \pi^+ \pi^+ \pi^0 \nu_\tau$	$0.0365 \pm 0.0211\%$	$0.0490 \pm 0.0057\%$	0.00000
$\tau^- \rightarrow \pi^- K_L^0 K_L^0 \nu_\tau$	$0.0243 \pm 0.0172\%$	$0.0510 \pm 0.0058\%$	0.00000
$\tau^- \rightarrow K_S^0 \pi^- \gamma \nu_\tau$	$0.0122 \pm 0.0122\%$	$0.0067 \pm 0.0021\%$	0.00000
$\tau^- \rightarrow \pi^- \gamma \gamma \nu_\tau$	$0.0122 \pm 0.0122\%$	$0.0040 \pm 0.0016\%$	300.00000
$\tau^- \rightarrow K^- \gamma \nu_\tau$	$0.0122 \pm 0.0122\%$	$0.0161 \pm 0.0033\%$	0.00000
$\tau^- \rightarrow \gamma \nu_\tau \tilde{\nu}_e e^-$	$0.0122 \pm 0.0122\%$	$0.0141 \pm 0.0031\%$	0.00000
Channels From Second Generator Only:			
$\tau^- \rightarrow \gamma \gamma \tau^-$	-	$0.0872 \pm 0.00765\%$	-
$\tau^- \rightarrow \pi^- \pi^0 \pi^0 \gamma \nu_\tau$	-	$0.0483 \pm 0.00569\%$	-
$\tau^- \rightarrow K^- \pi^0 \gamma \nu_\tau$	-	$0.0080 \pm 0.00232\%$	-
$\tau^- \rightarrow \gamma \nu_\tau \tilde{\nu}_e e^-$	-	$0.0054 \pm 0.00190\%$	-
$\tau^- \rightarrow \gamma \nu_\tau \tilde{\nu}_\mu \mu^-$	-	$0.0047 \pm 0.00177\%$	-
$\tau^- \rightarrow \pi^- K_L^0 \gamma \nu_\tau$	-	$0.0027 \pm 0.00134\%$	-
$\tau^- \rightarrow \gamma \gamma \tau^-$	-	$0.0027 \pm 0.00134\%$	-
$\tau^- \rightarrow K^- \pi^- \pi^+ \gamma \nu_\tau$	-	$0.0027 \pm 0.00134\%$	-
$\tau^- \rightarrow \pi^- \pi^0 \pi^0 \pi^0 \gamma \nu_\tau$	-	$0.0020 \pm 0.00116\%$	-
$\tau^- \rightarrow \pi^- K_L^0 \pi^0 \gamma \nu_\tau$	-	$0.0013 \pm 0.00095\%$	-
$\tau^- \rightarrow K^- K^+ \pi^- \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow K_S^0 \pi^- \pi^0 \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow K^- \gamma \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow \pi^- \pi^- \pi^- \pi^+ \pi^+ \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow \pi^- \pi^- \pi^+ \gamma \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow K^- K_L^0 \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow K^- K_L^0 \pi^0 \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-
$\tau^- \rightarrow \pi^- \pi^0 \gamma \gamma \nu_\tau$	-	$0.0007 \pm 0.00067\%$	-

Similarity coefficients: T1=12.692388 %, T2=0.727244 %

## Contents

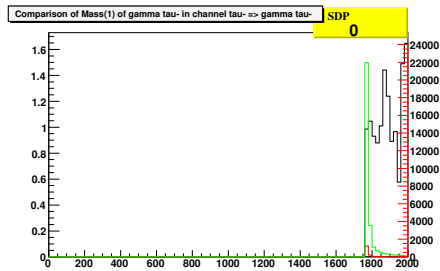
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2	Decay Channel: $\tau^- \rightarrow \pi^-\nu_\tau$	6
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# 1 Decay Channel: $\tau^- \rightarrow \gamma \tau^-$

Number of events from generator 1: 1972

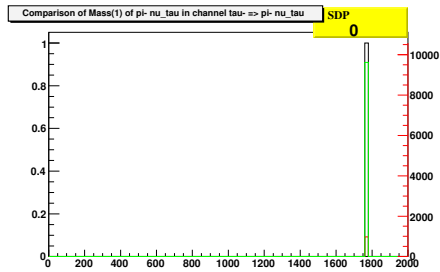
Number of events from generator 2: 35274



# 2 Decay Channel: $\tau^- \rightarrow \pi^- \nu_\tau$

Number of events from generator 1: 979

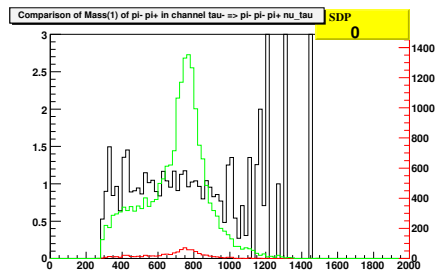
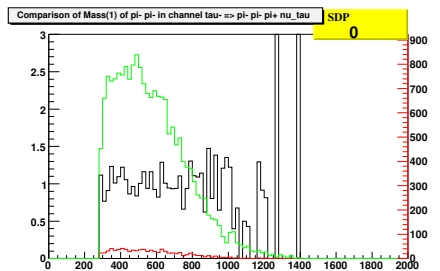
Number of events from generator 2: 9614

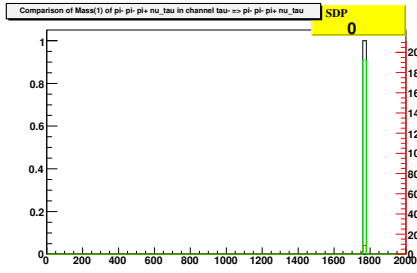
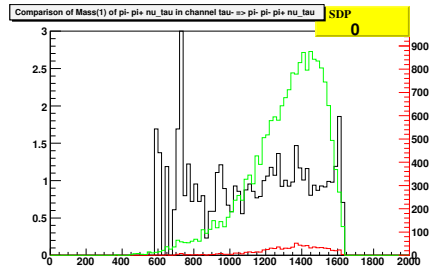
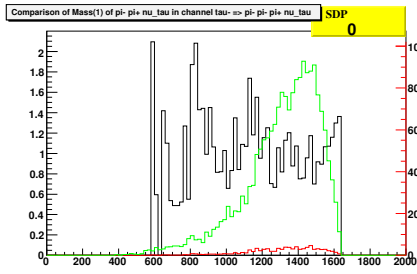
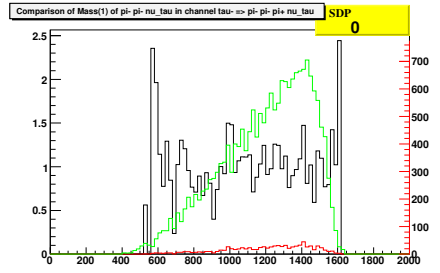
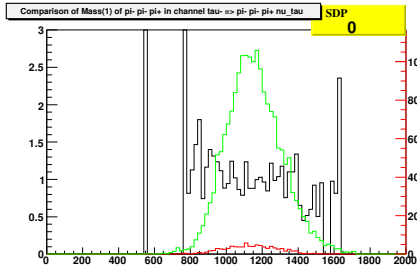
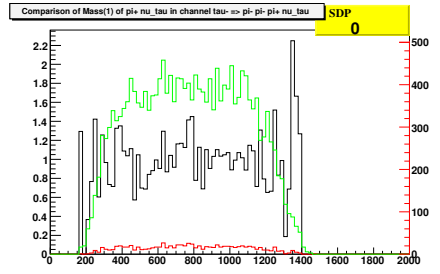
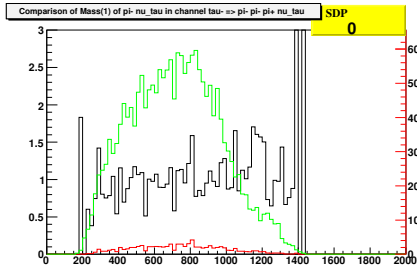
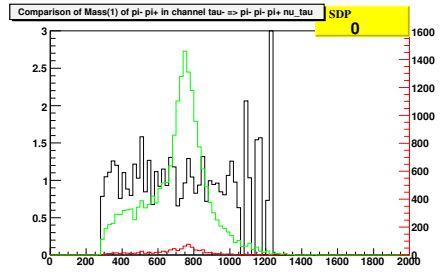
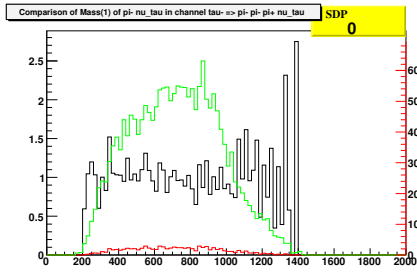


# 3 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^+ \nu_\tau$

Number of events from generator 1: 875

Number of events from generator 2: 19242

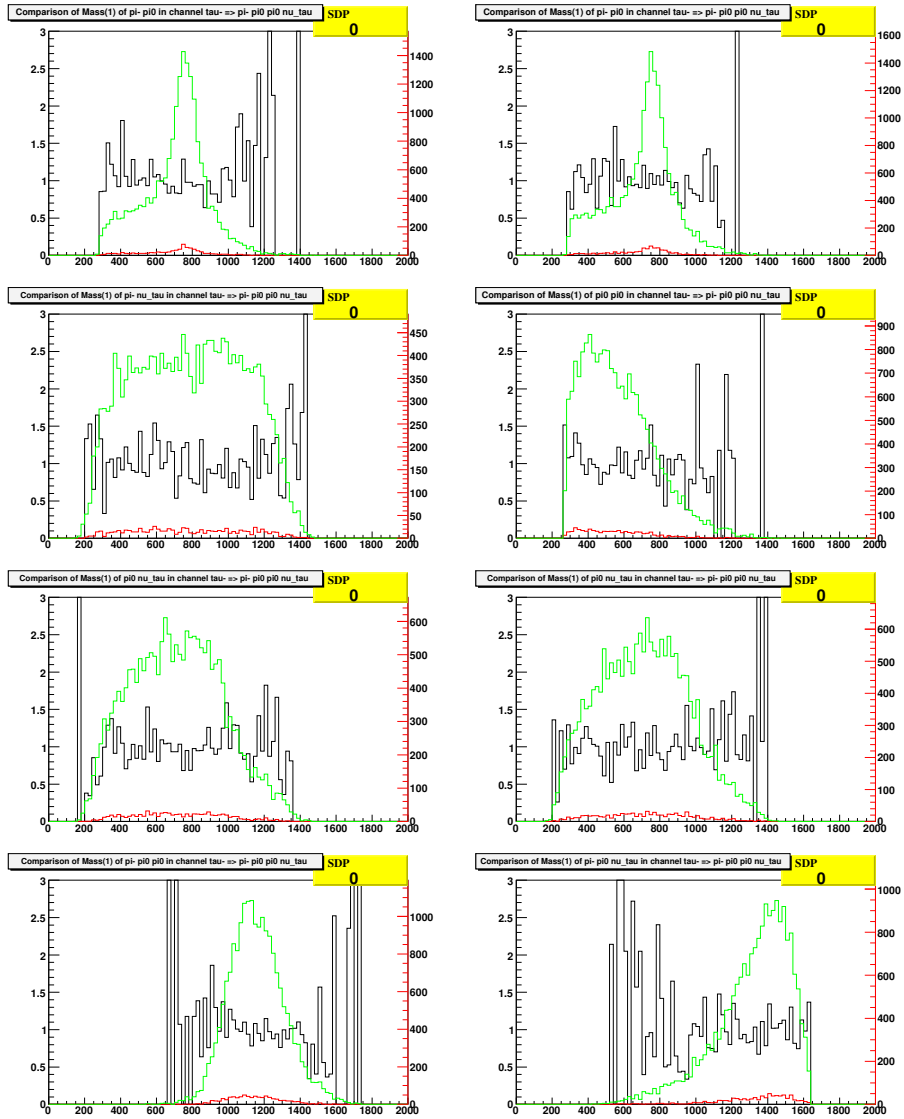




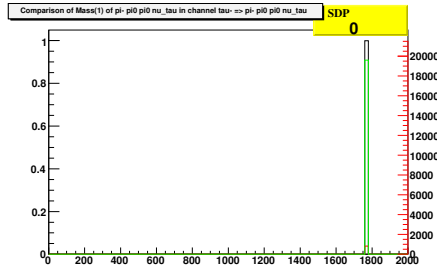
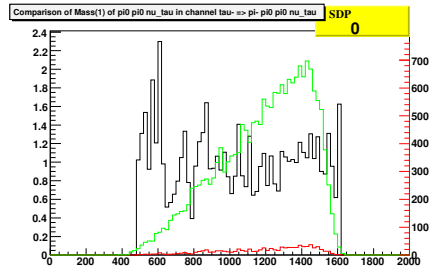
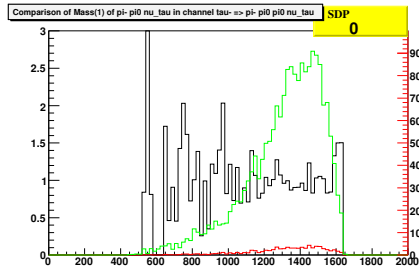
## 4 Decay Channel: $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$

Number of events from generator 1: 832

Number of events from generator 2: 19600



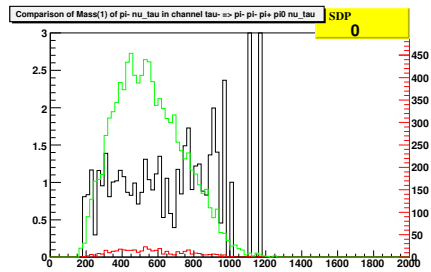
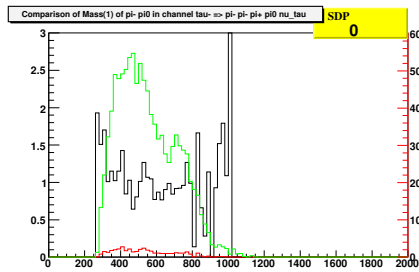
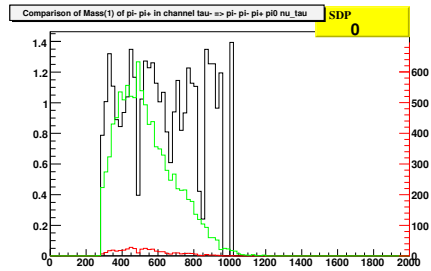
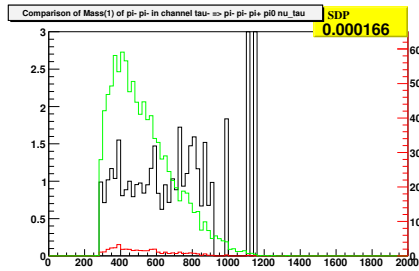


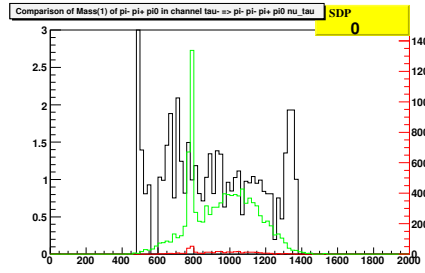
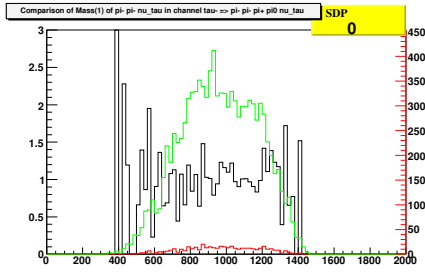
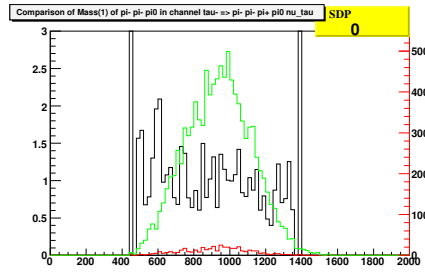
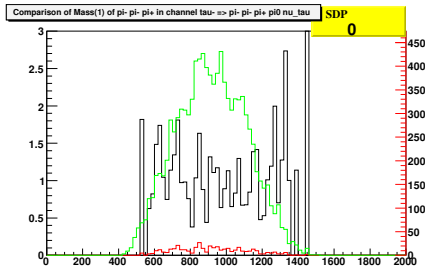
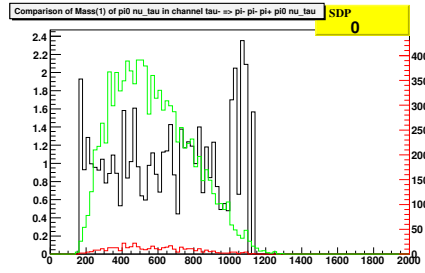
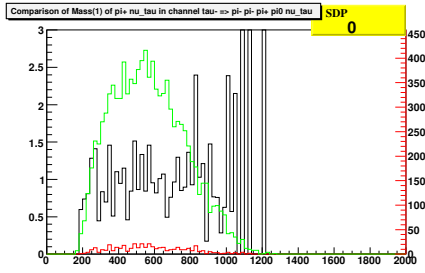
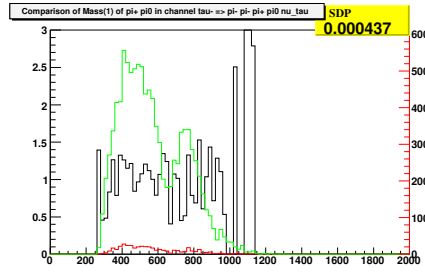
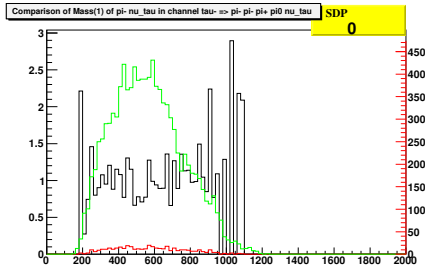
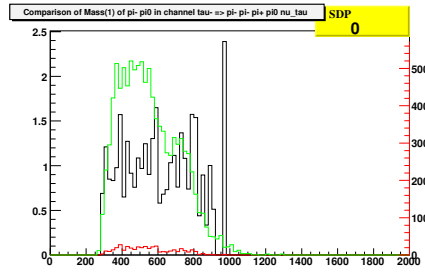
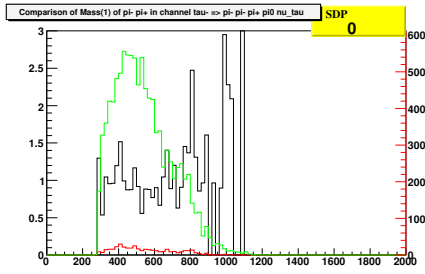


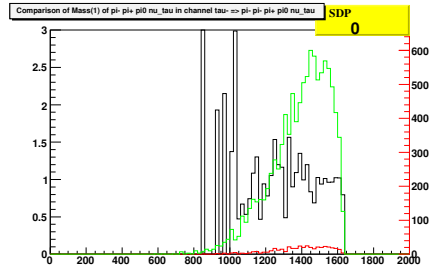
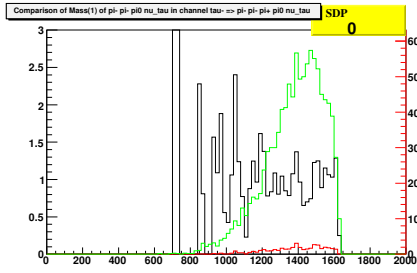
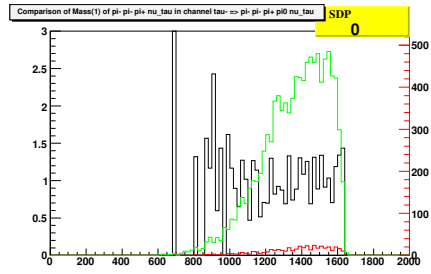
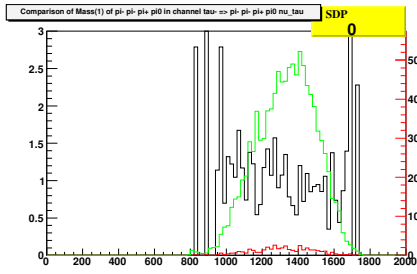
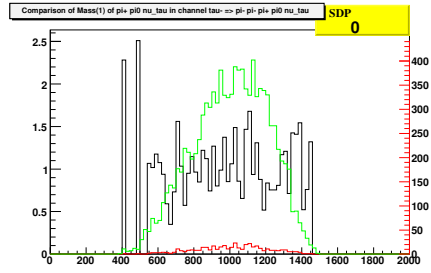
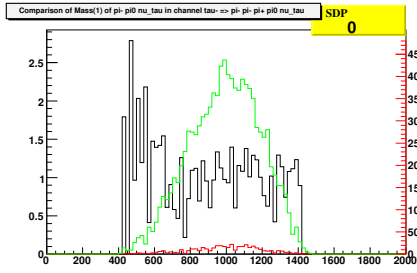
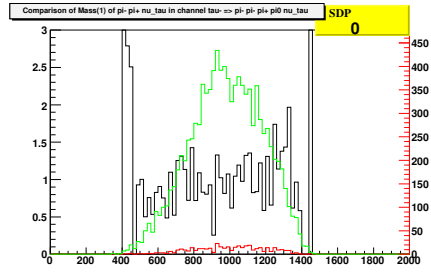
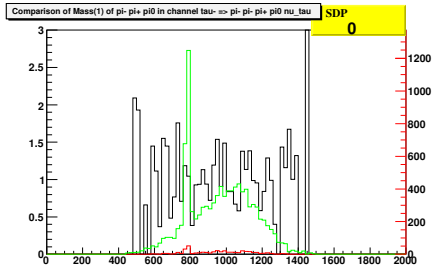
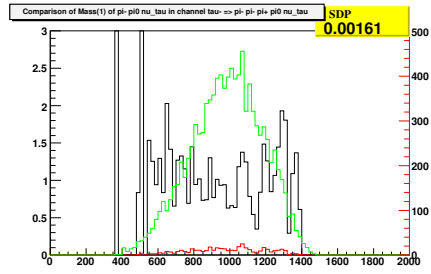
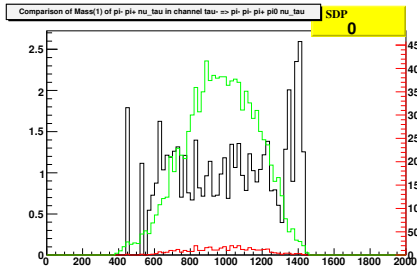
## 5 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \nu_\tau$

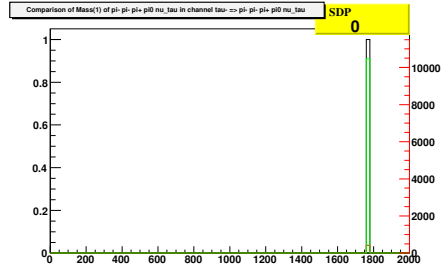
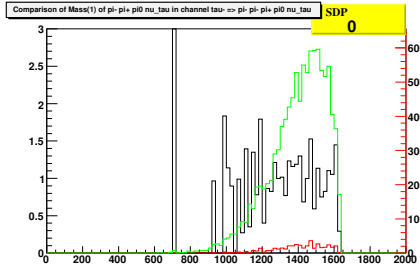
Number of events from generator 1: 417

Number of events from generator 2: 10460





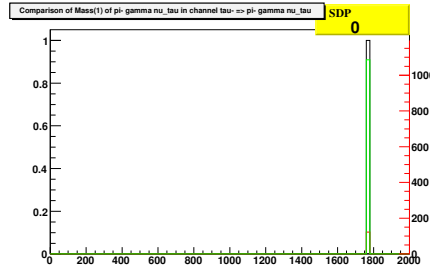
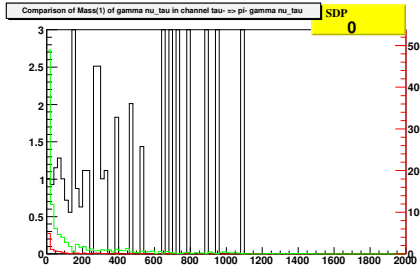
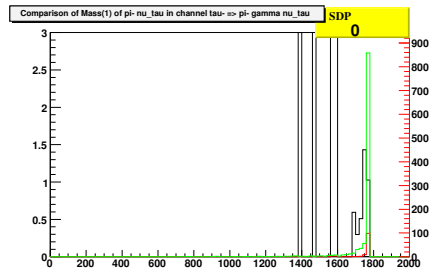
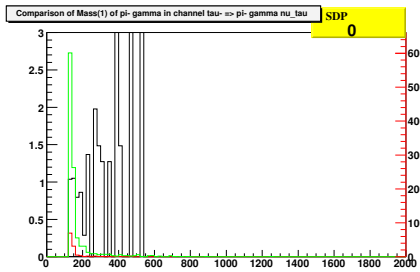




## 6 Decay Channel: $\tau^- \rightarrow \pi^- \gamma \nu_\tau$

Number of events from generator 1: 122

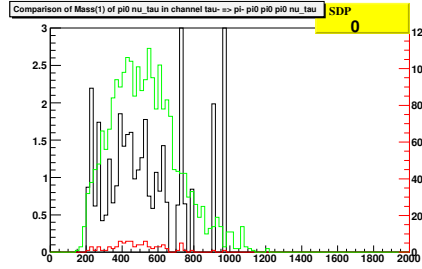
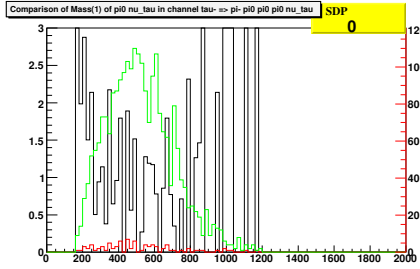
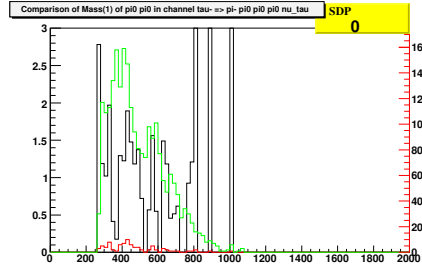
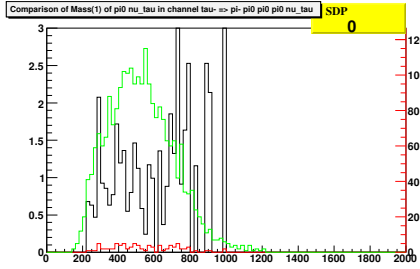
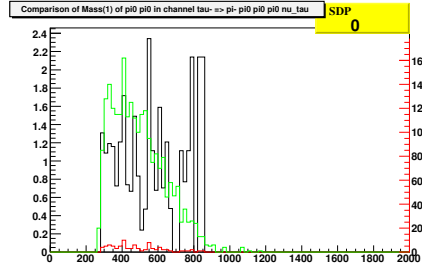
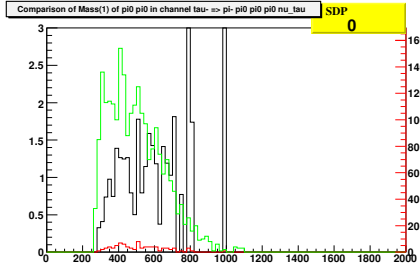
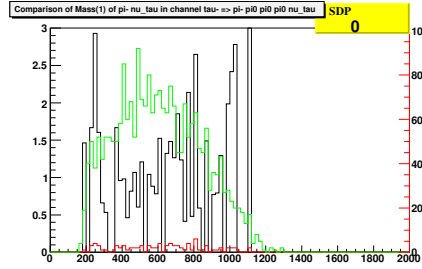
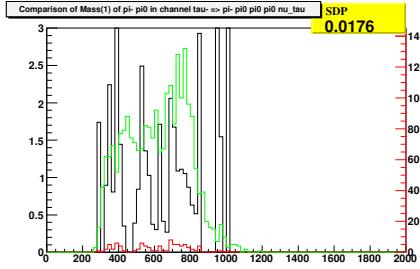
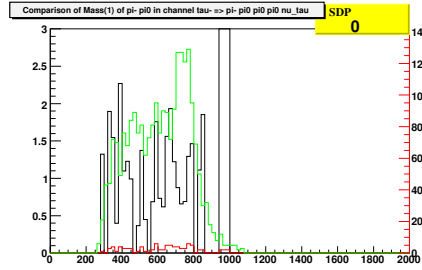
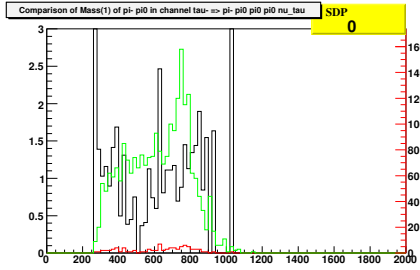
Number of events from generator 2: 1086

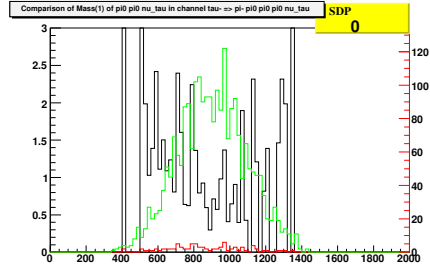
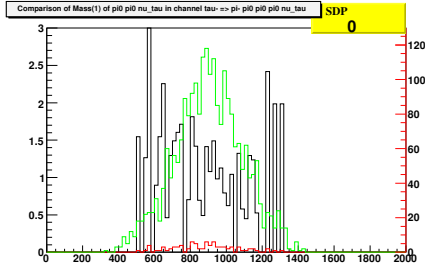
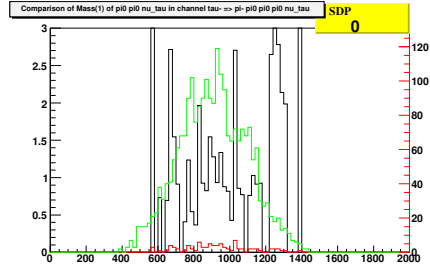
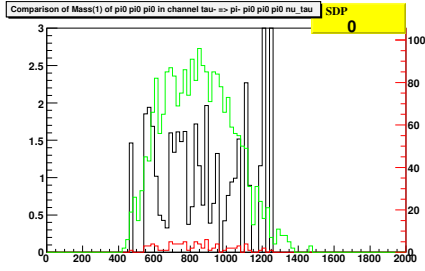
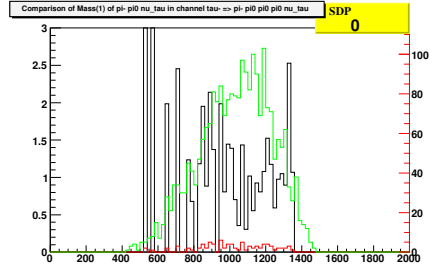
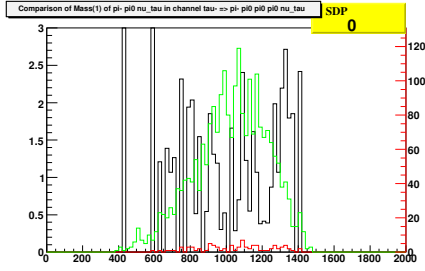
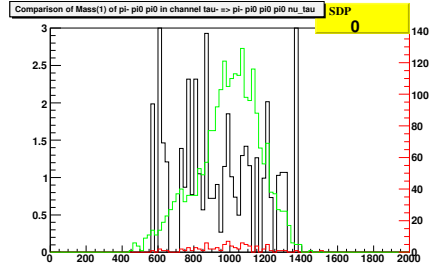
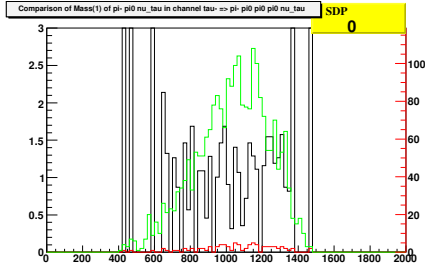
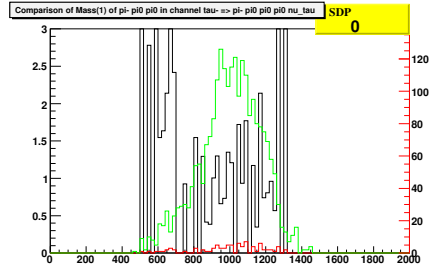
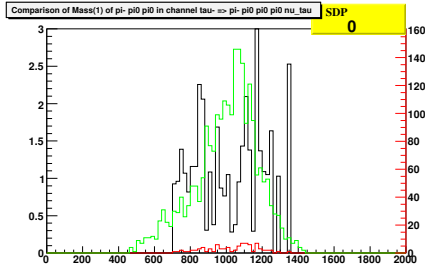


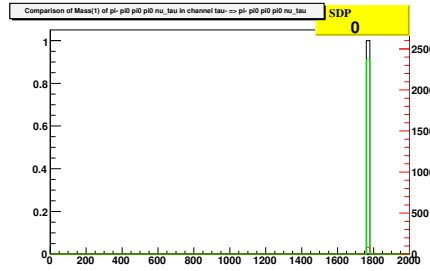
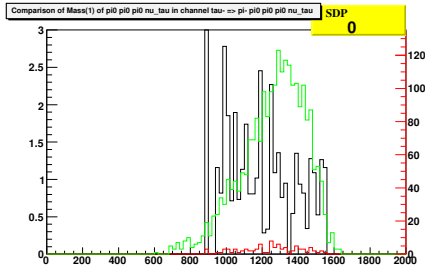
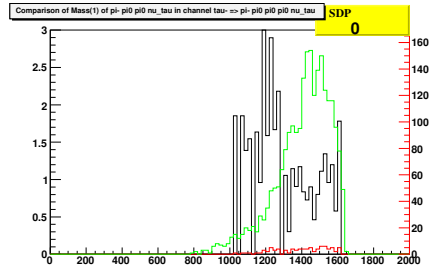
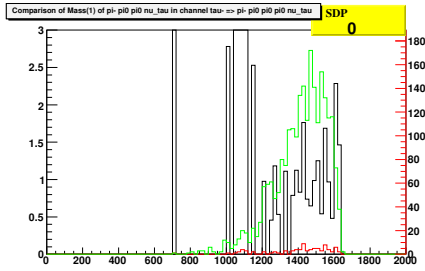
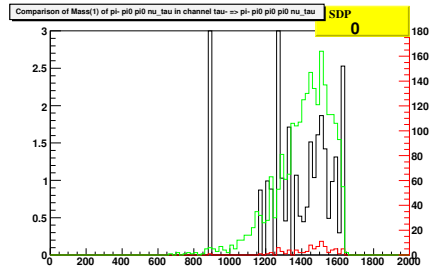
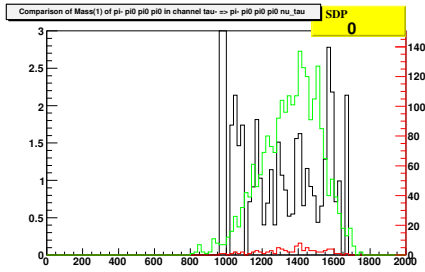
## 7 Decay Channel: $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \pi^0 \nu_\tau$

Number of events from generator 1: 85

Number of events from generator 2: 2364



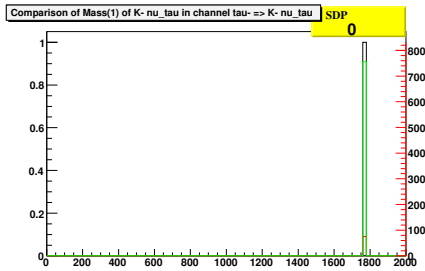




## 8 Decay Channel: $\tau^- \rightarrow K^- \nu_\tau$

Number of events from generator 1: 75

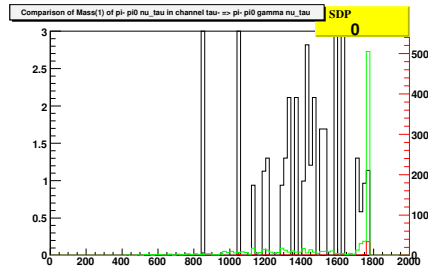
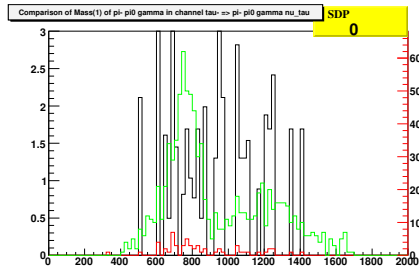
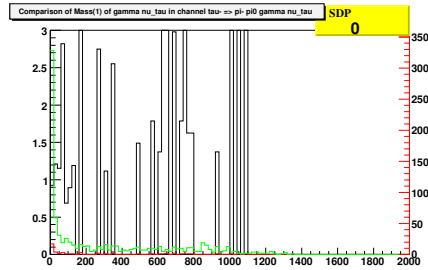
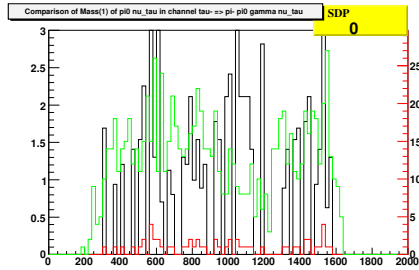
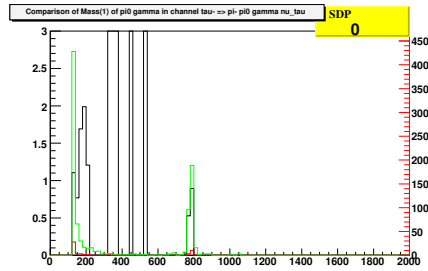
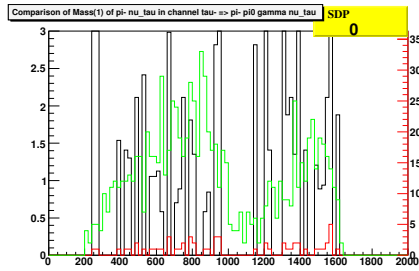
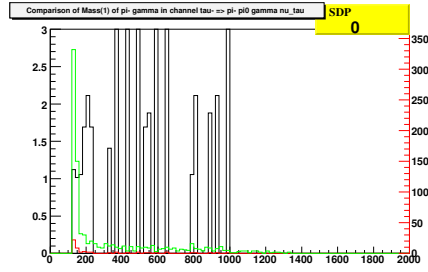
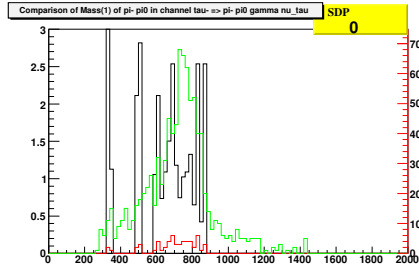
Number of events from generator 2: 756



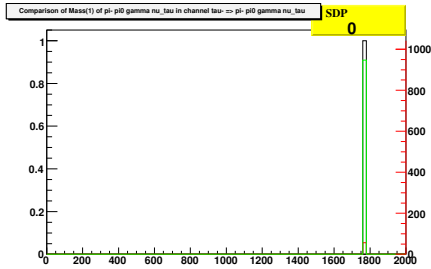
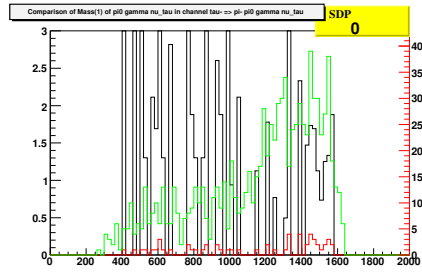
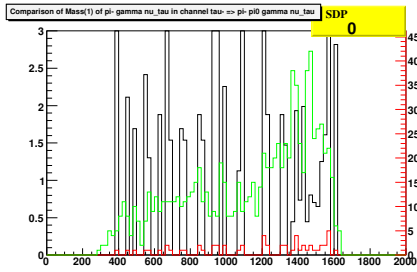
## 9 Decay Channel: $\tau^- \rightarrow \pi^- \pi^0 \gamma \nu_\tau$

Number of events from generator 1: 56

Number of events from generator 2: 947



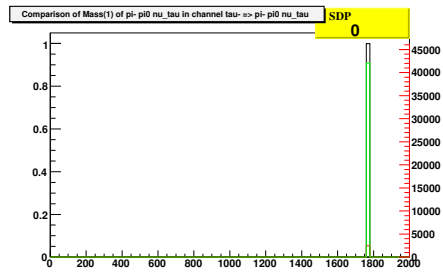
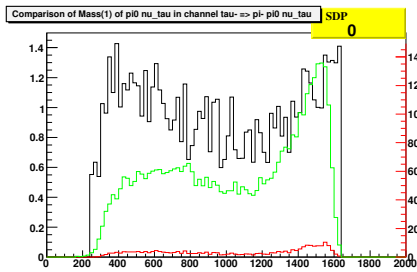
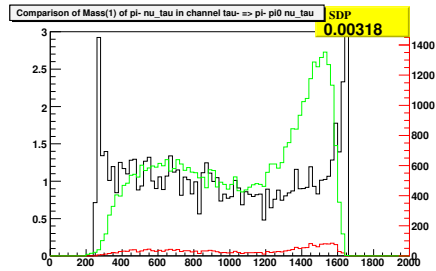
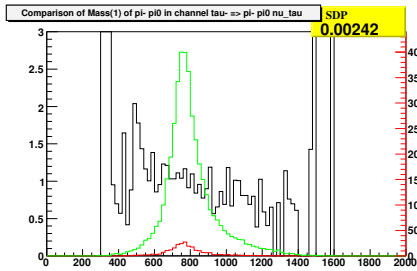




## 10 Decay Channel: $\tau^- \rightarrow \pi^- \pi^0 \nu_\tau$

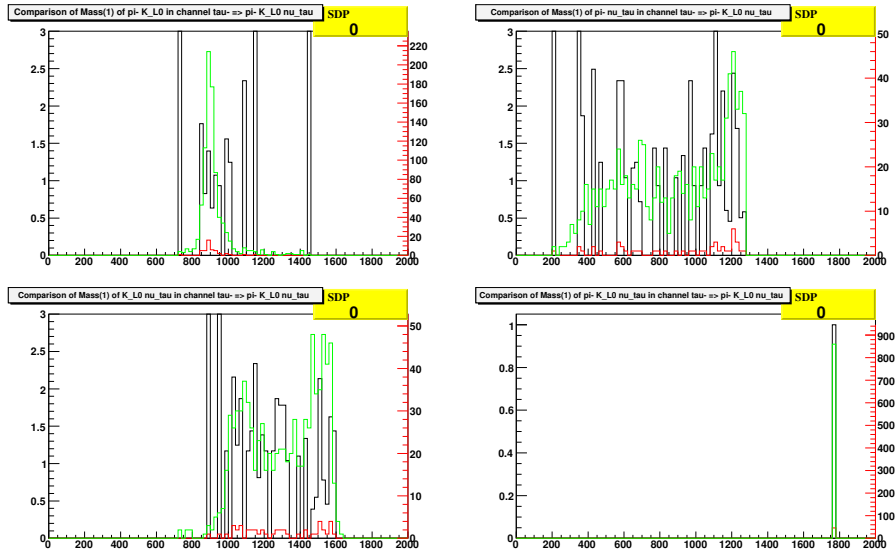
Number of events from generator 1: 2457

Number of events from generator 2: 42070



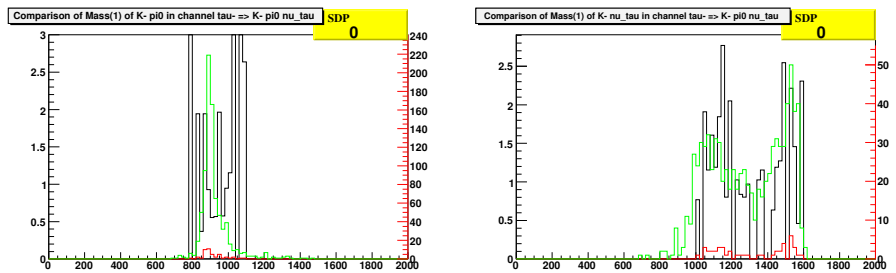
## 11 Decay Channel: $\tau^- \rightarrow \pi^- K_L^0 \nu_\tau$

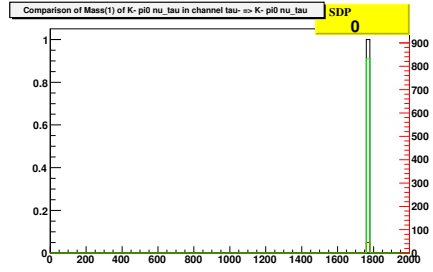
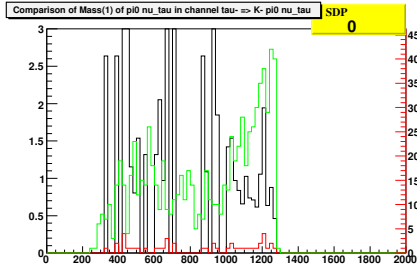
Number of events from generator 1: 46  
 Number of events from generator 2: 860



## 12 Decay Channel: $\tau^- \rightarrow K^- \pi^0 \nu_\tau$

Number of events from generator 1: 45  
 Number of events from generator 2: 831

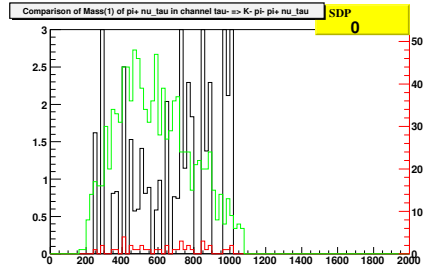
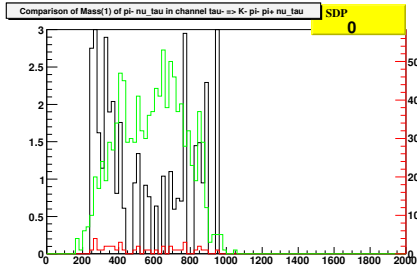
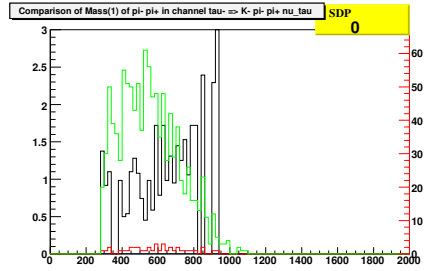
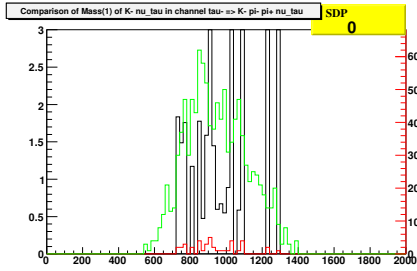
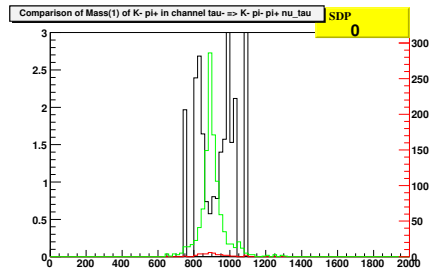
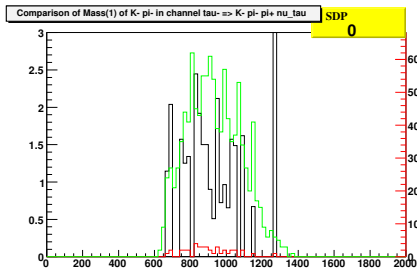


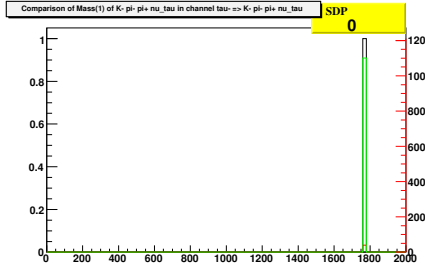
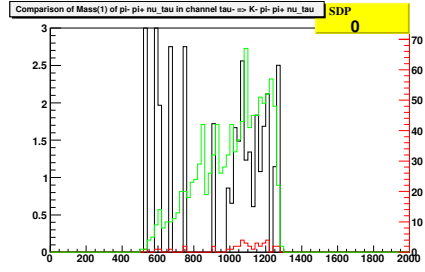
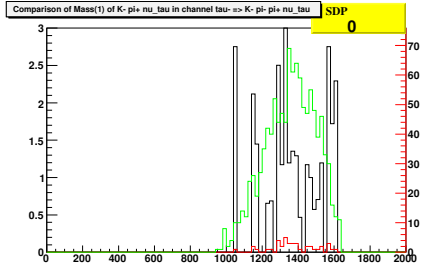
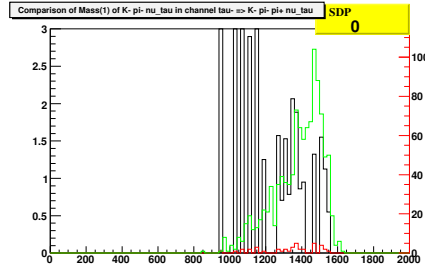
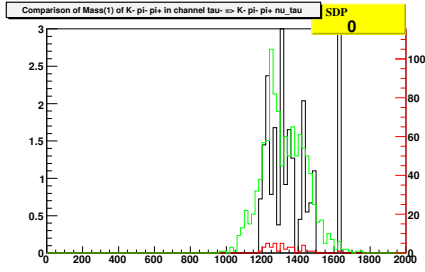


### 13 Decay Channel: $\tau^- \rightarrow K^- \pi^- \pi^+ \nu_\tau$

Number of events from generator 1: 40

Number of events from generator 2: 1101

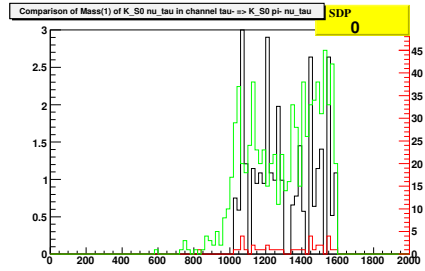
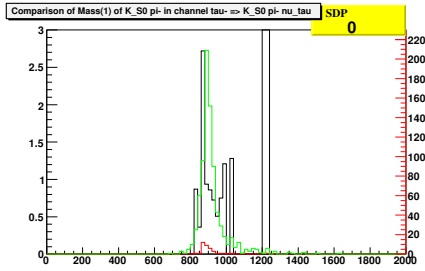


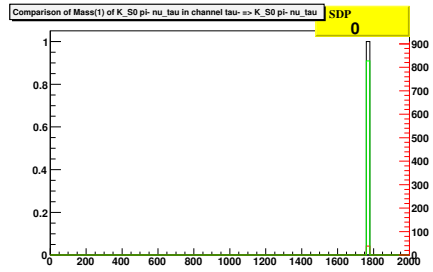
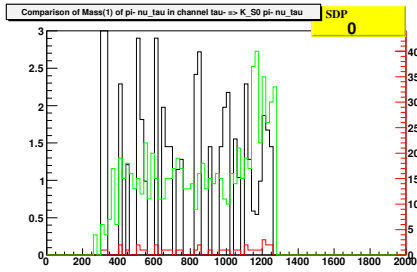


## 14 Decay Channel: $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$

Number of events from generator 1: 38

Number of events from generator 2: 827

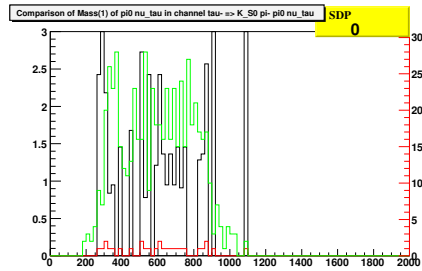
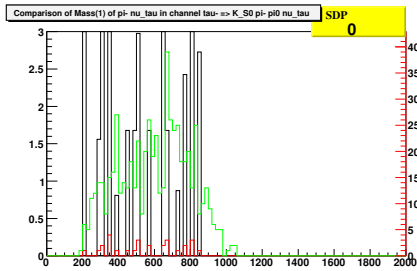
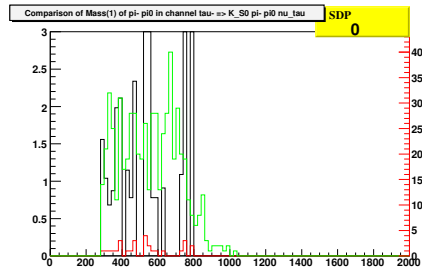
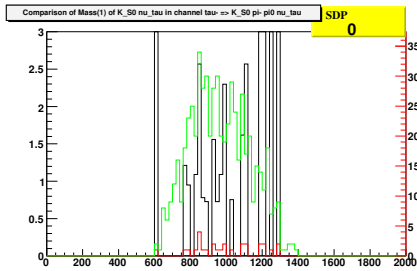
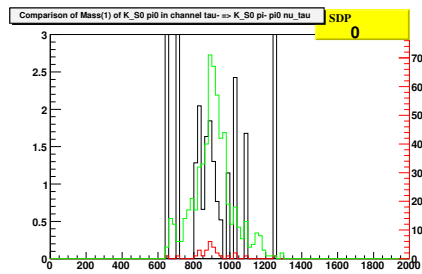
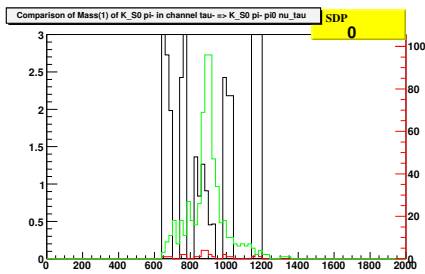


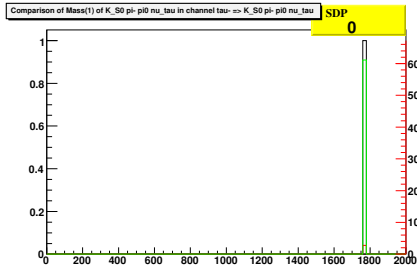
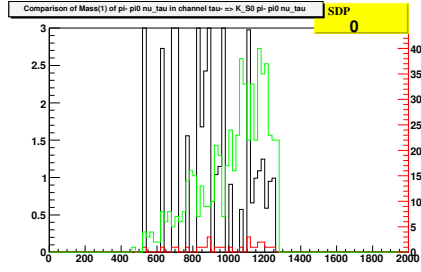
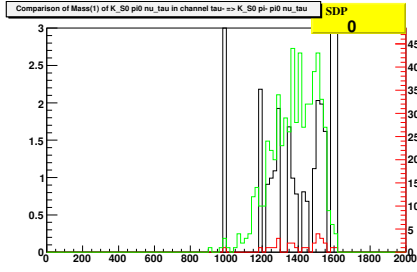
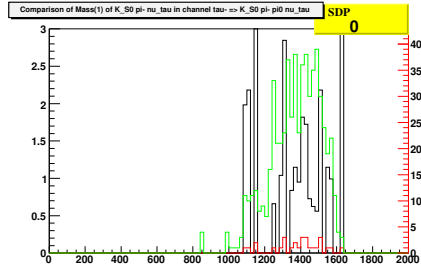
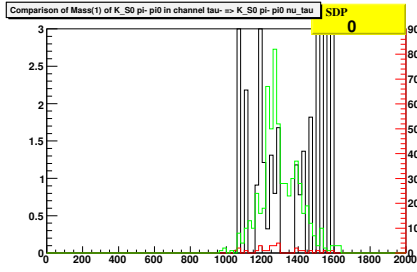


## 15 Decay Channel: $\tau^- \rightarrow K_S^0 \pi^- \pi^0 \nu_\tau$

Number of events from generator 1: 28

Number of events from generator 2: 611

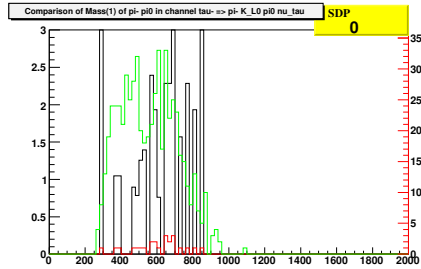
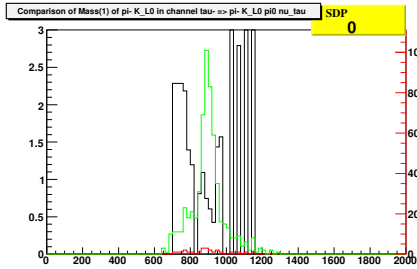


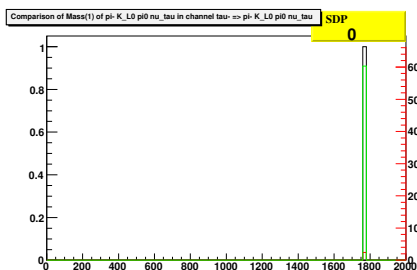
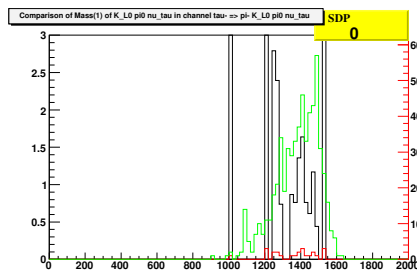
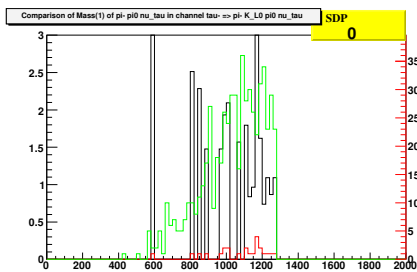
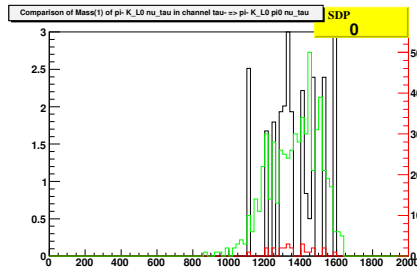
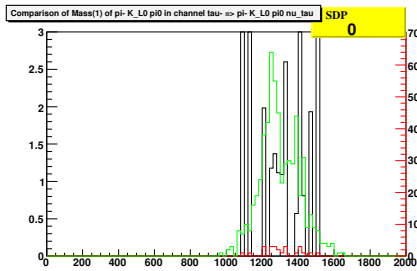
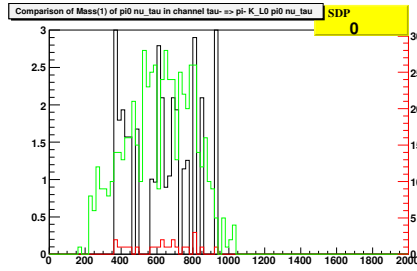
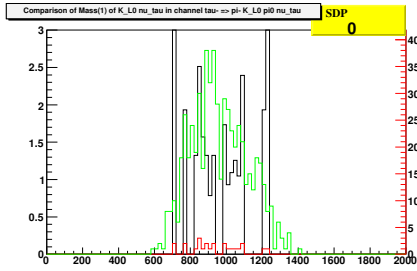
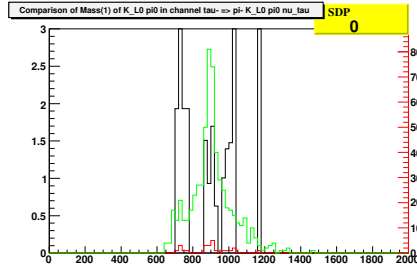
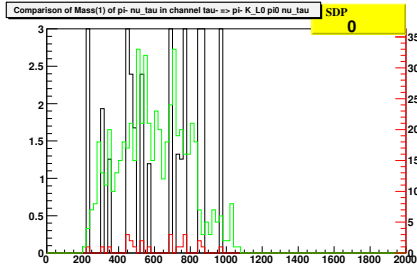


## 16 Decay Channel: $\tau^- \rightarrow \pi^- K_L^0 \pi^0 \nu_\tau$

Number of events from generator 1: 24

Number of events from generator 2: 603

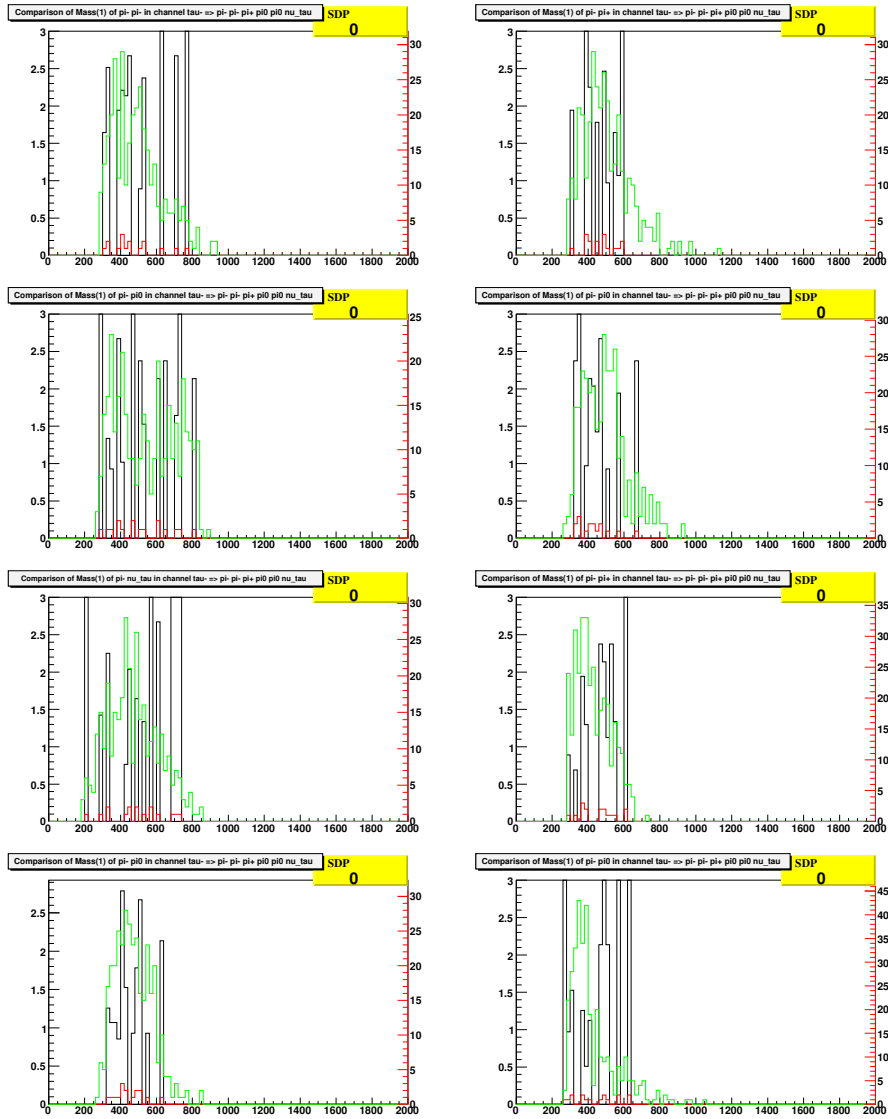




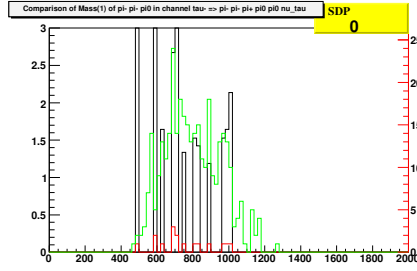
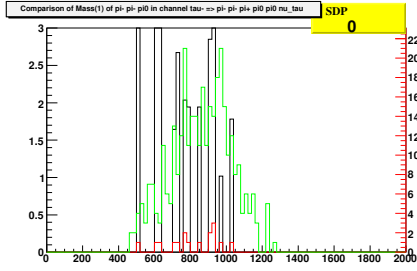
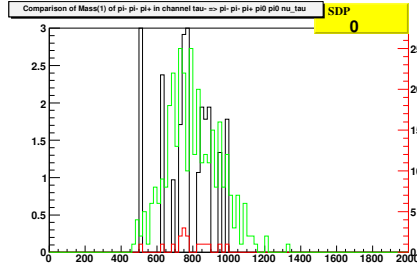
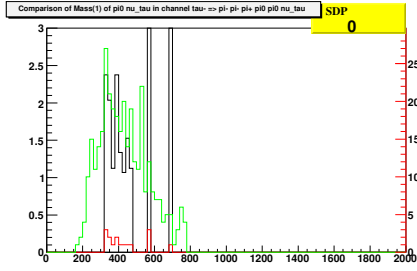
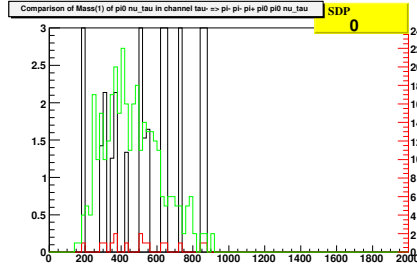
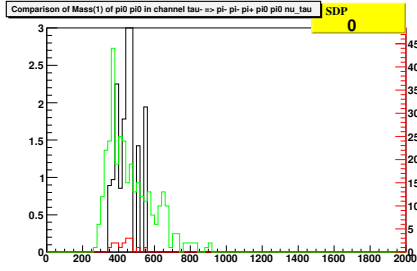
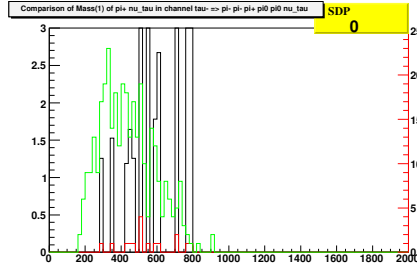
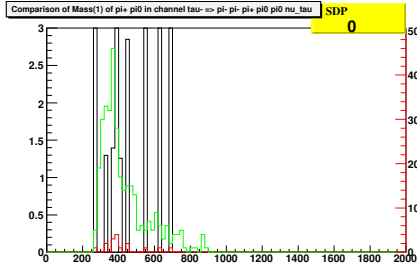
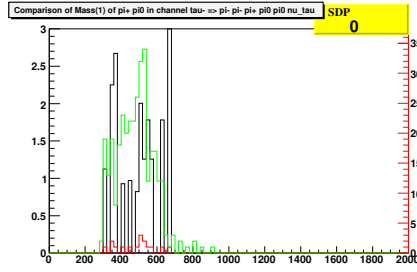
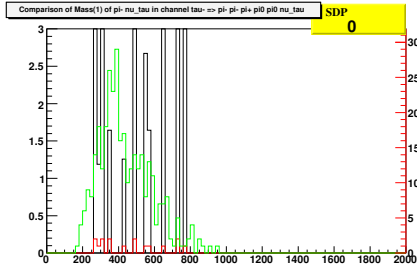
## 17 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \pi^0 \nu_\tau$

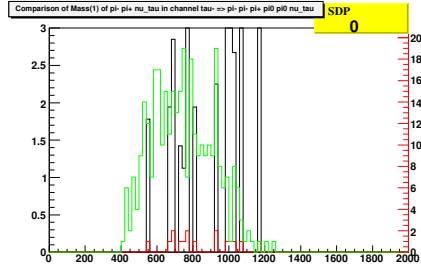
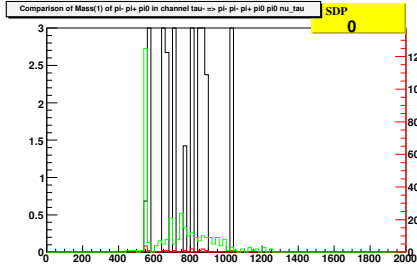
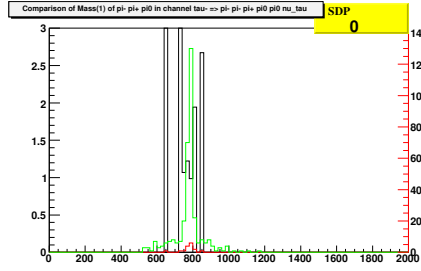
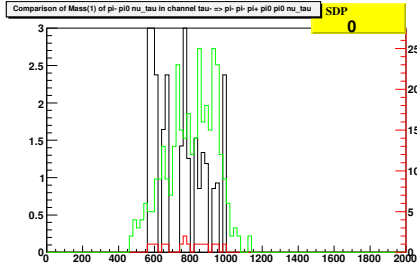
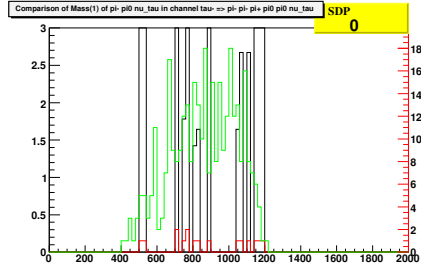
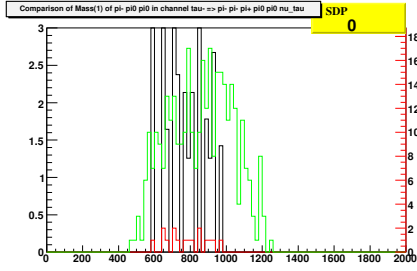
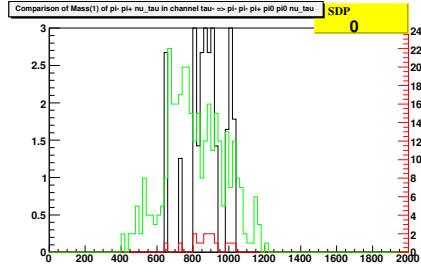
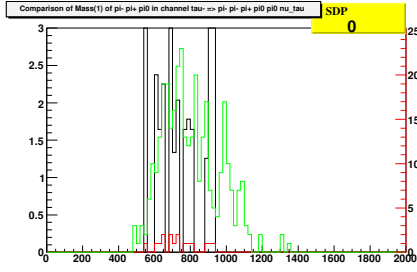
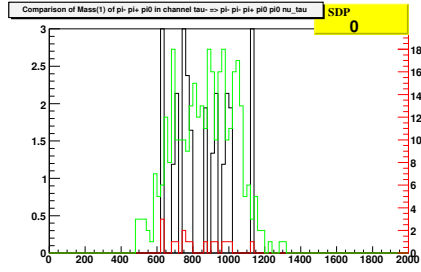
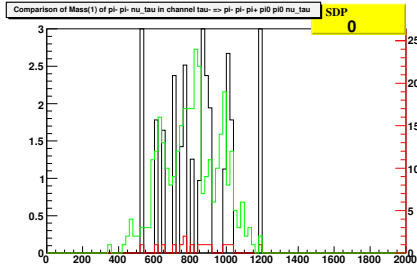
Number of events from generator 1: 16

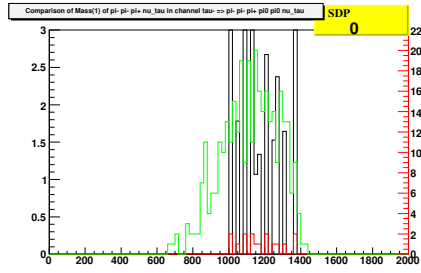
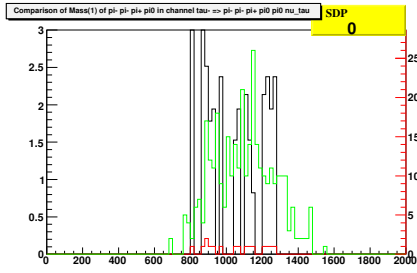
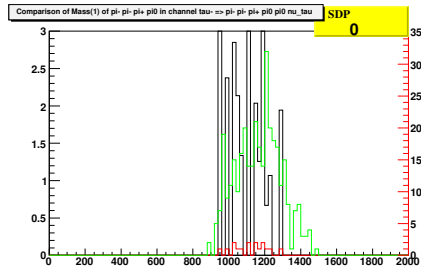
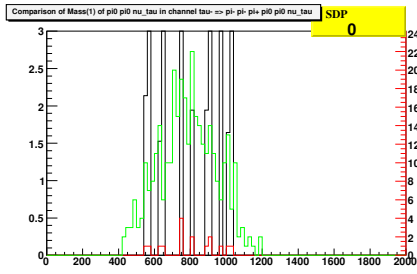
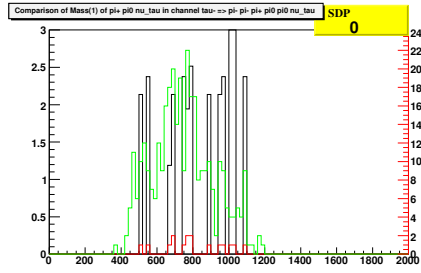
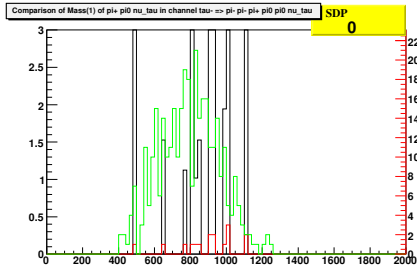
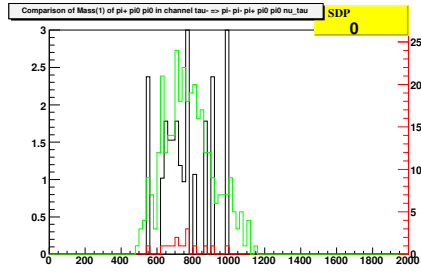
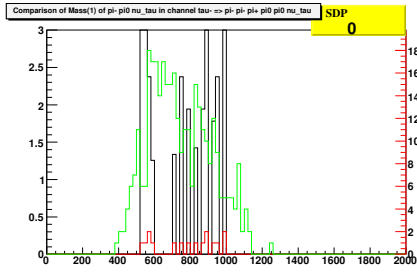
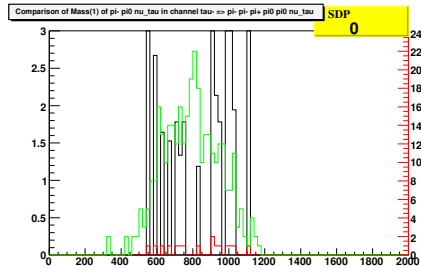
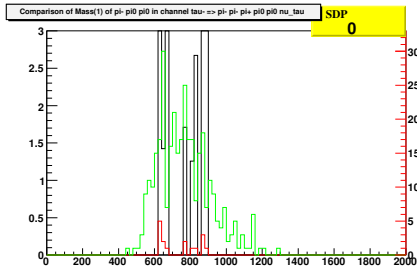
Number of events from generator 2: 342

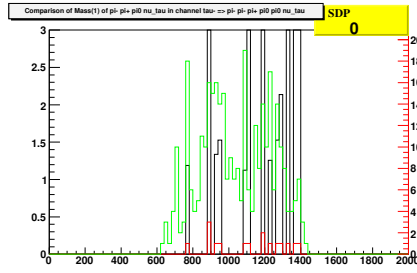
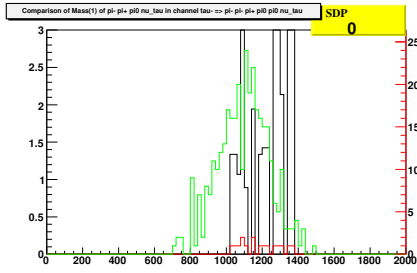
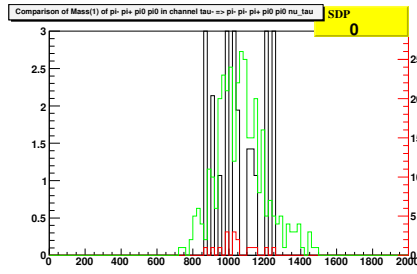
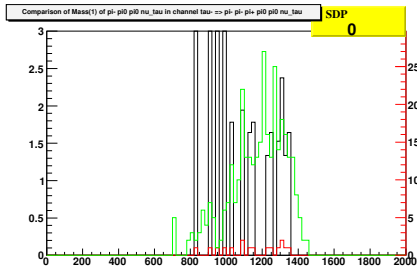
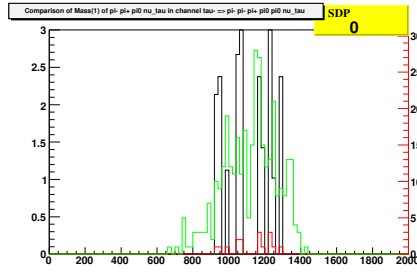
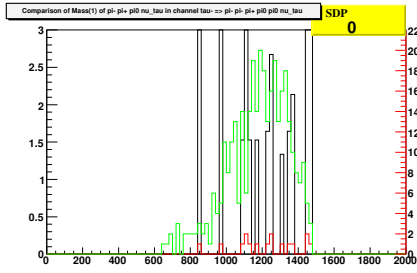
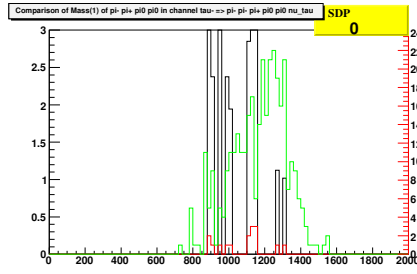
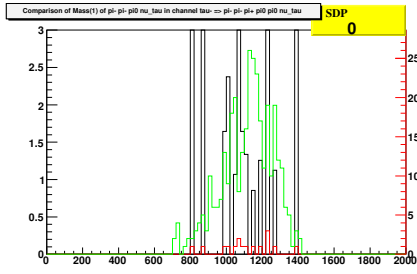
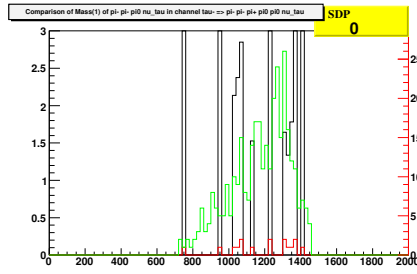
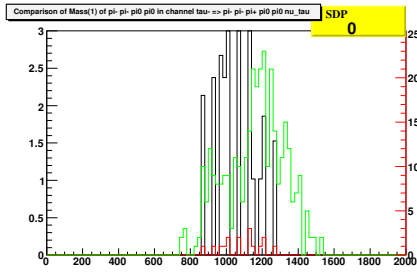


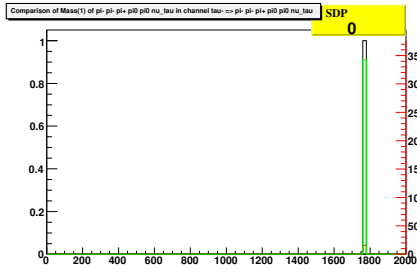
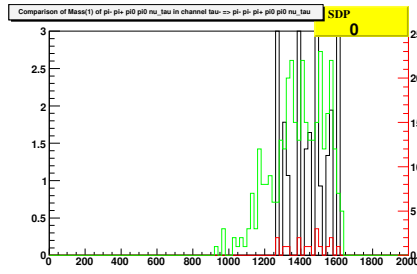
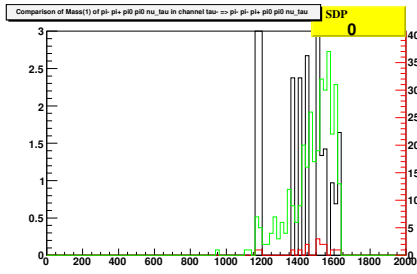
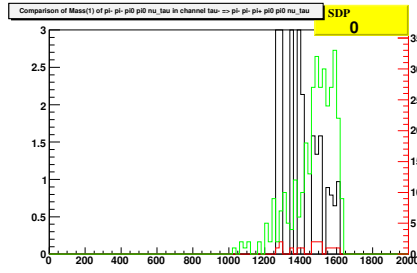
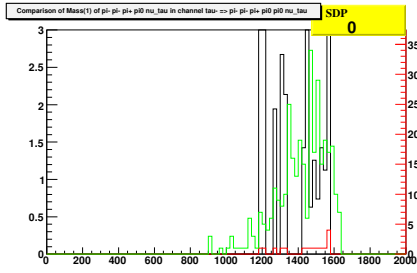
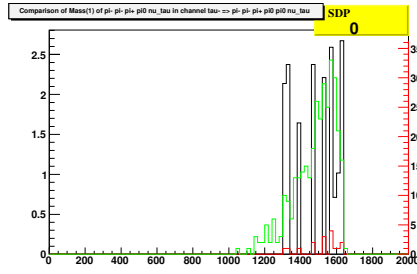
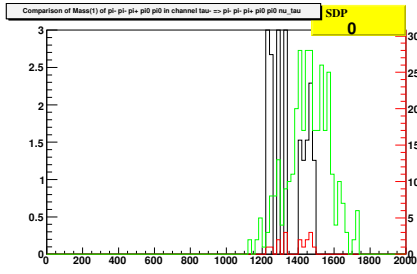
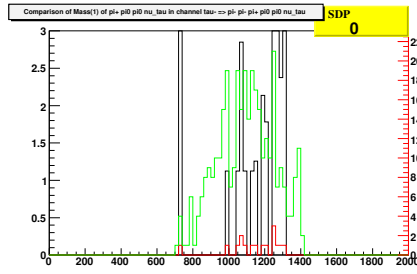
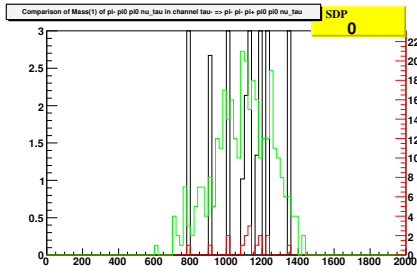








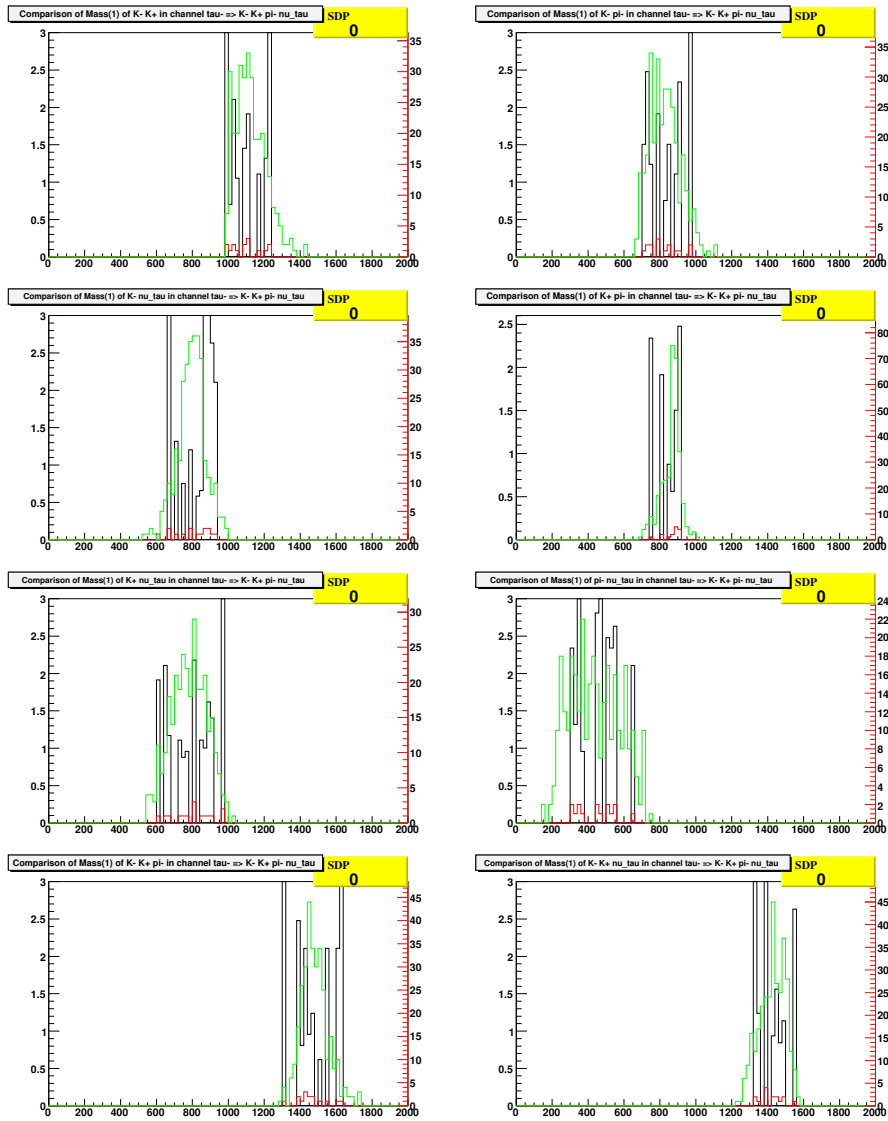


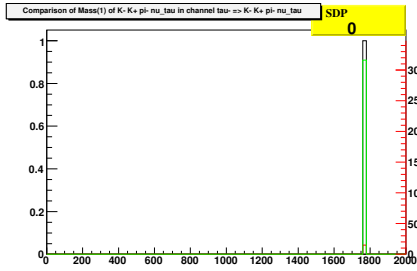
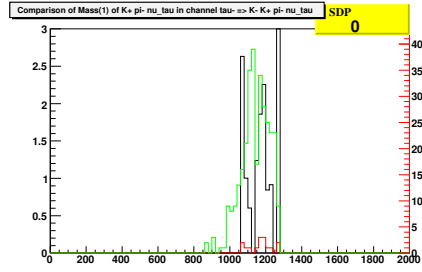
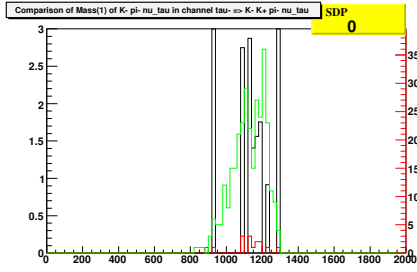


## 18 Decay Channel: $\tau^- \rightarrow K^- K^+ \pi^- \nu_\tau$

Number of events from generator 1: 15

Number of events from generator 2: 316

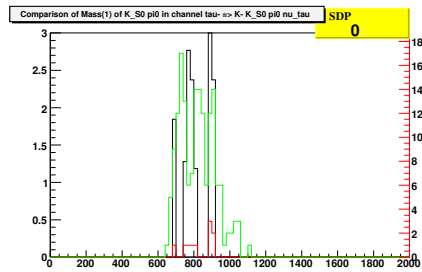
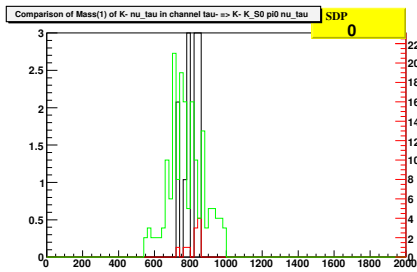
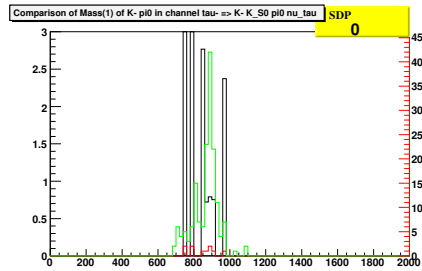
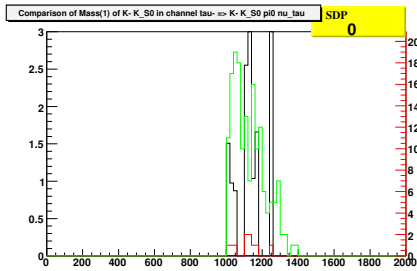


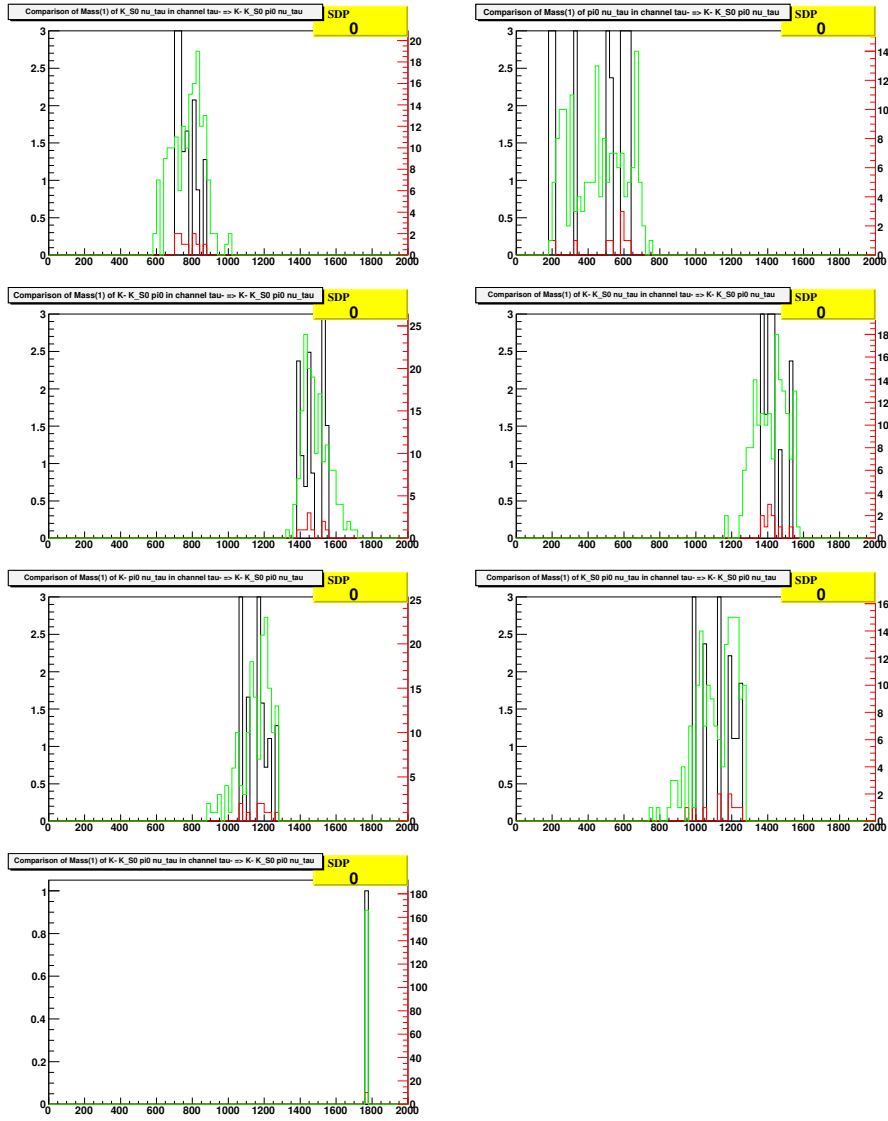


## 19 Decay Channel: $\tau^- \rightarrow K^- K_S^0 \pi^0 \nu_\tau$

Number of events from generator 1: 10

Number of events from generator 2: 166



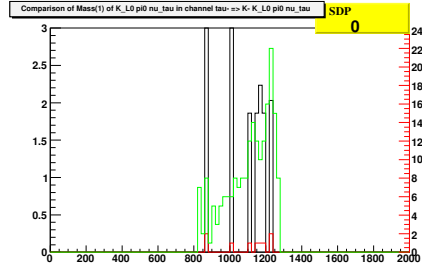
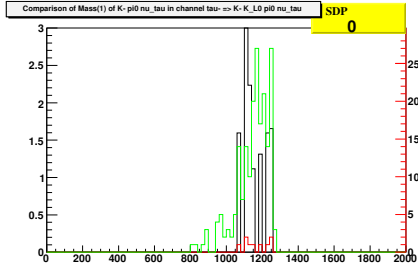
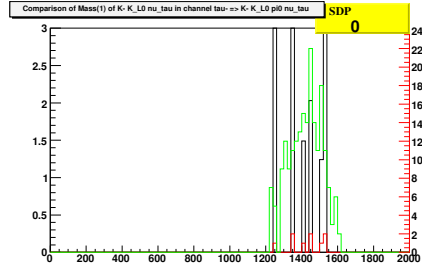
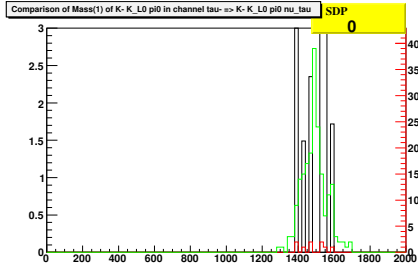
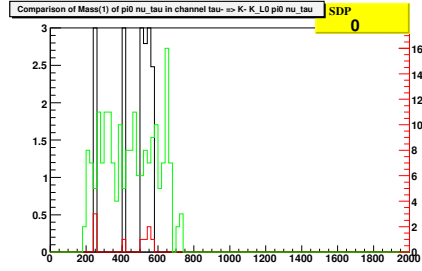
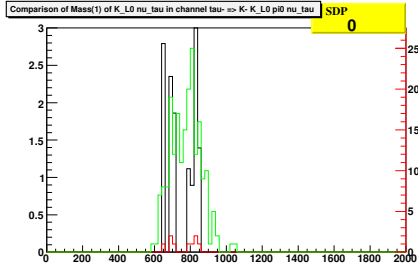
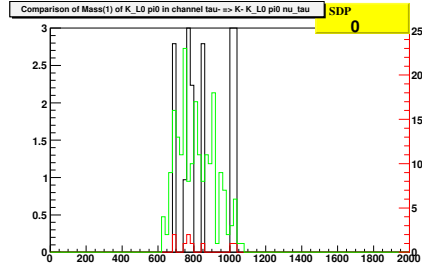
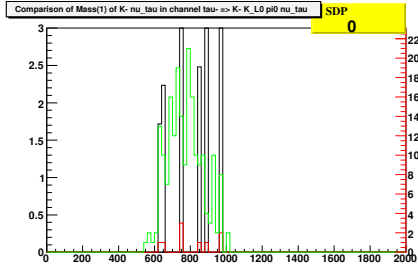
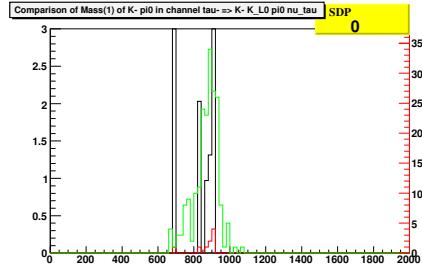
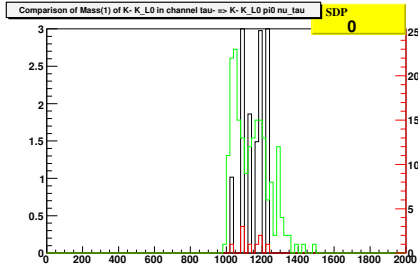


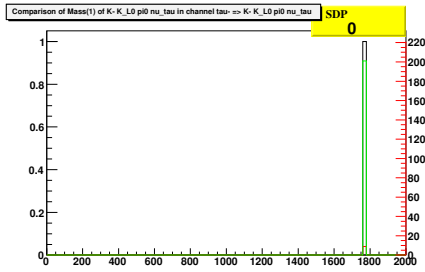
## 20 Decay Channel: $\tau^- \rightarrow K^- K_L^0 \pi^0 \nu_\tau$

Number of events from generator 1: 9

Number of events from generator 2: 201

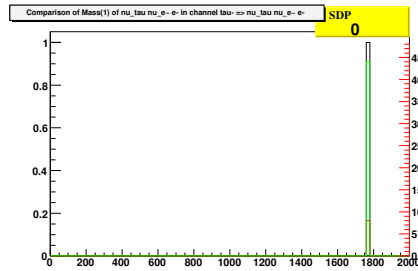
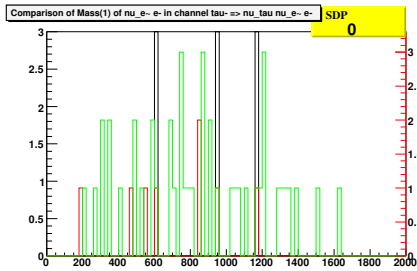
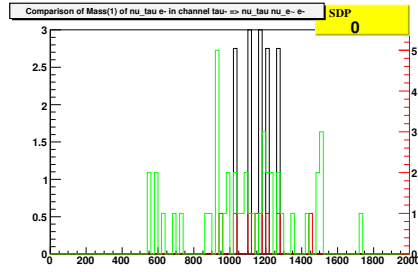
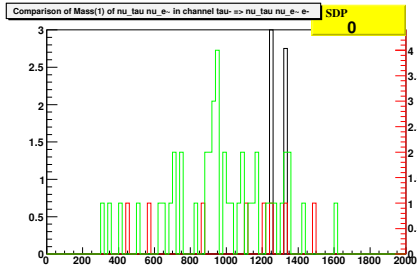






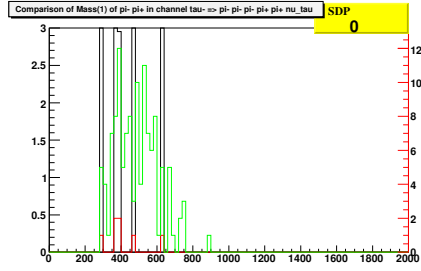
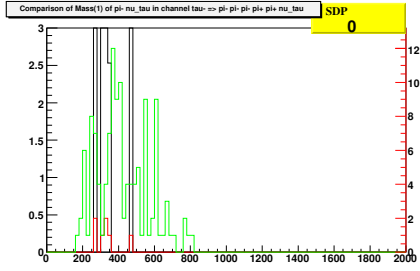
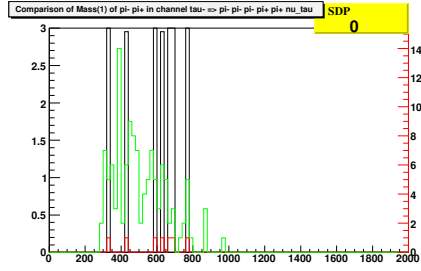
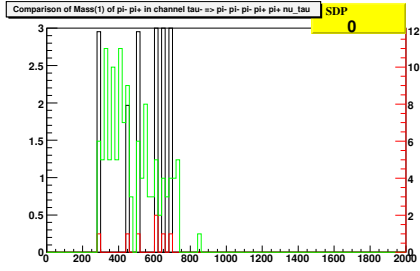
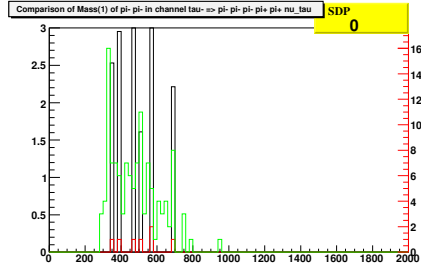
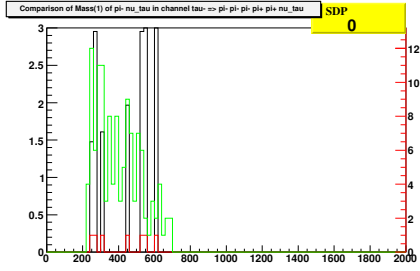
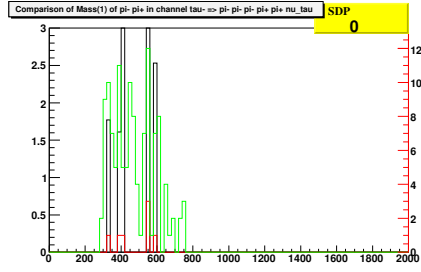
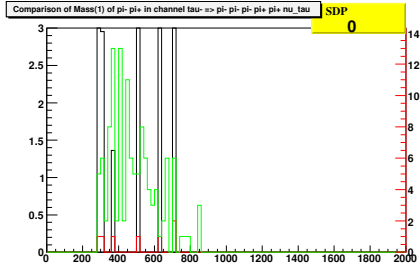
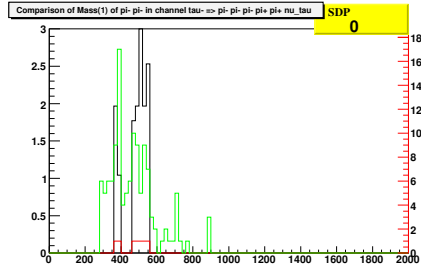
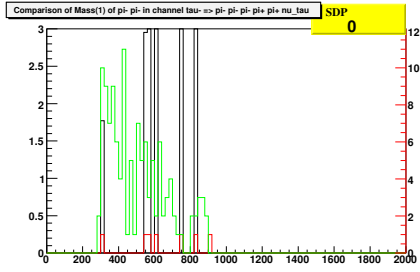
## 21 Decay Channel: $\tau^- \rightarrow \nu_\tau \tilde{\nu}_e e^-$

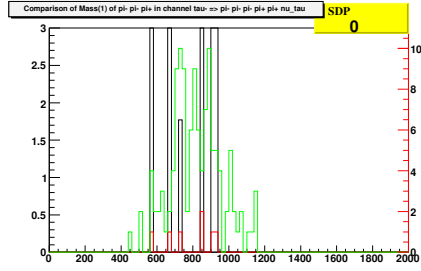
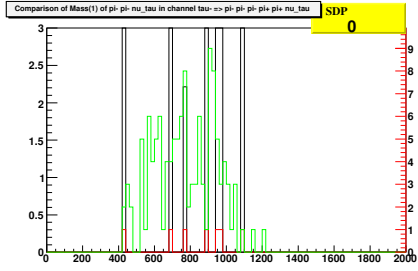
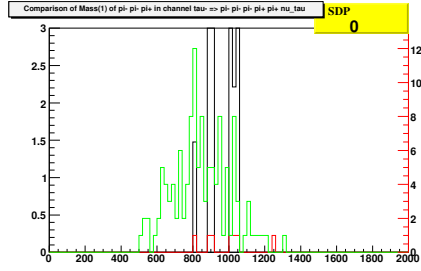
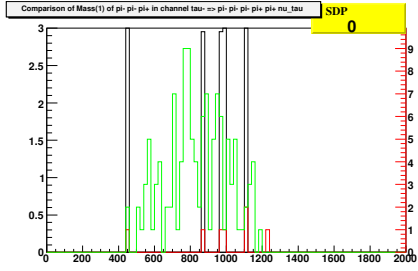
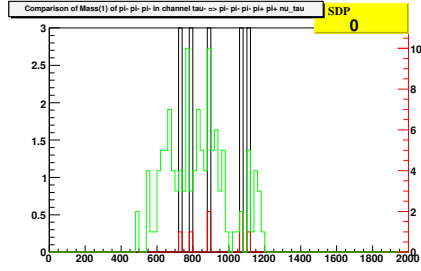
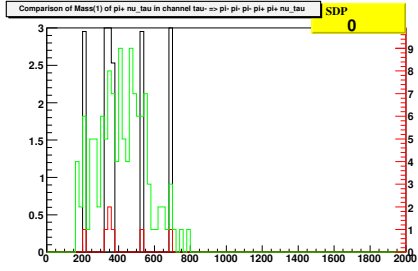
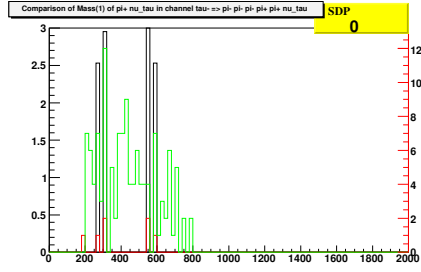
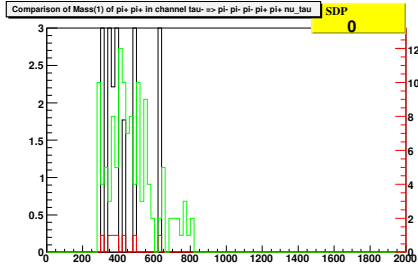
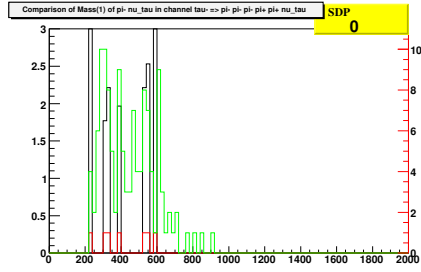
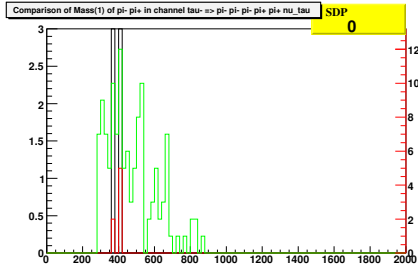
Number of events from generator 1: 8  
 Number of events from generator 2: 44

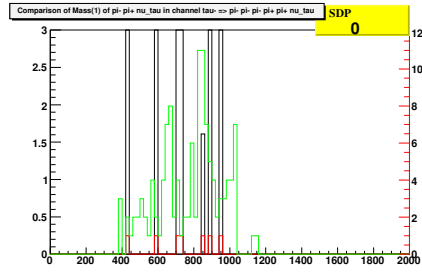
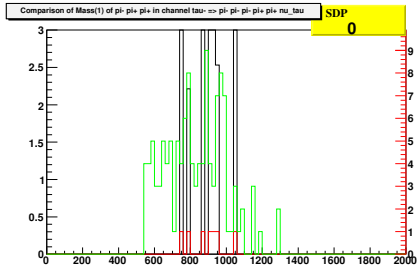
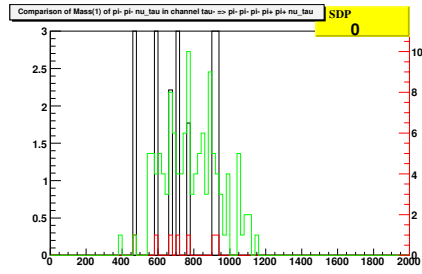
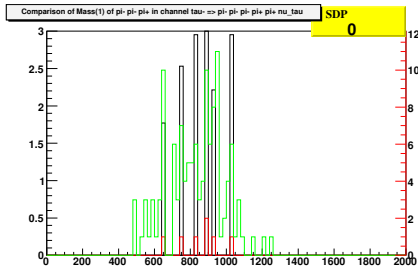
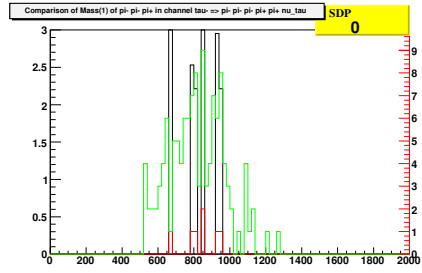
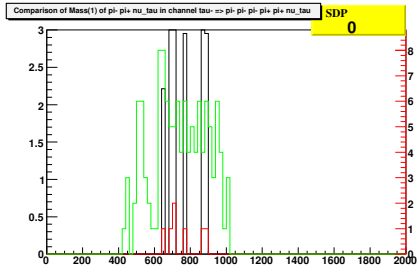
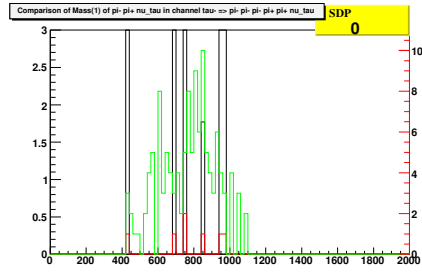
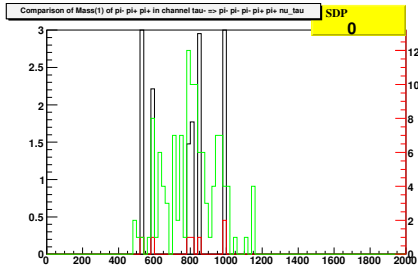
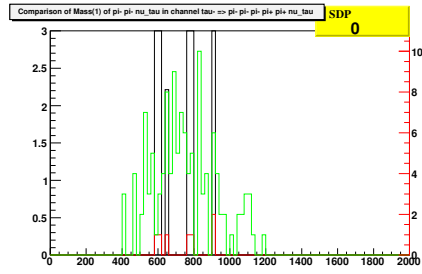
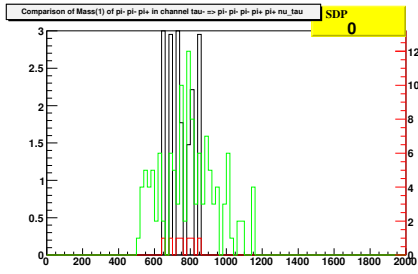


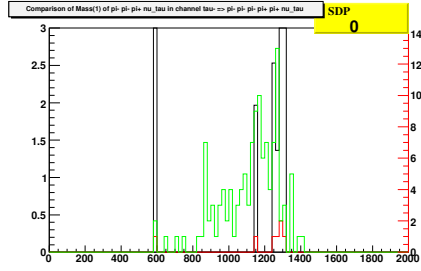
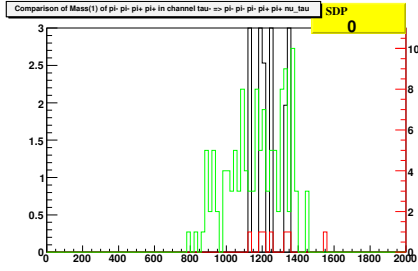
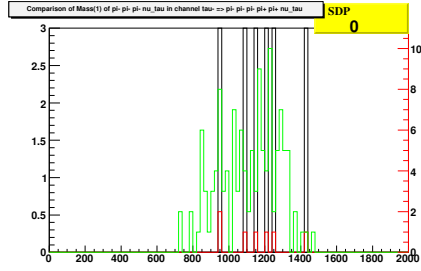
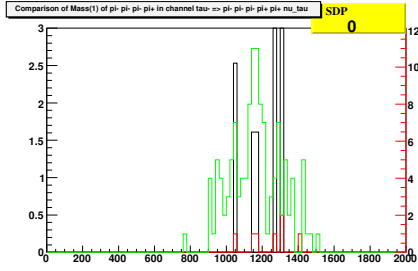
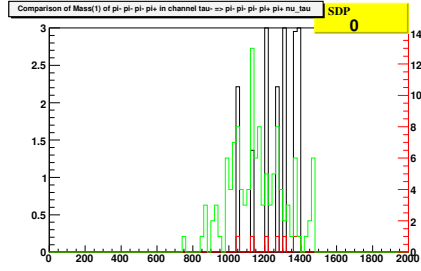
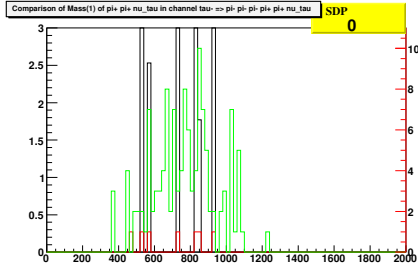
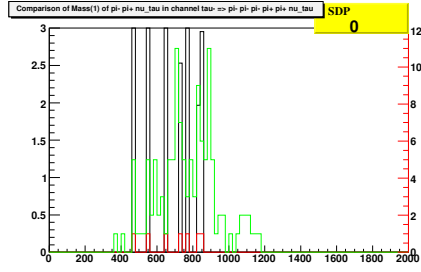
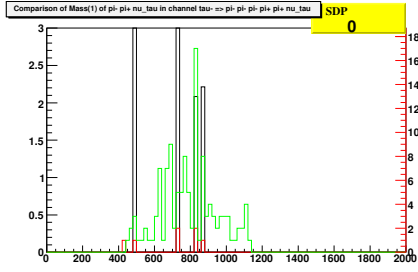
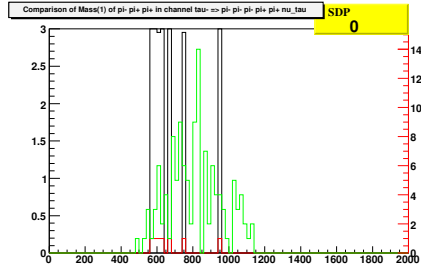
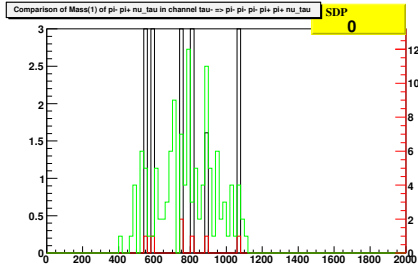
## 22 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^- \pi^+ \pi^+ \nu_\tau$

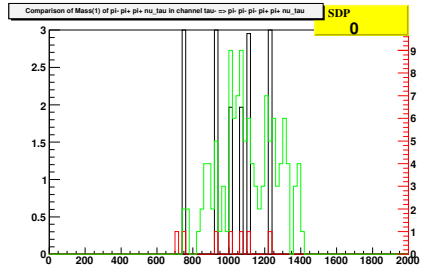
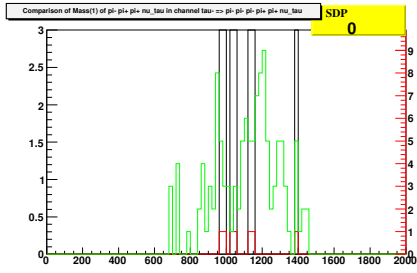
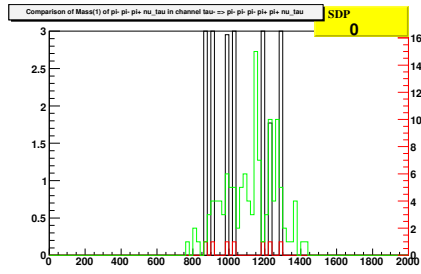
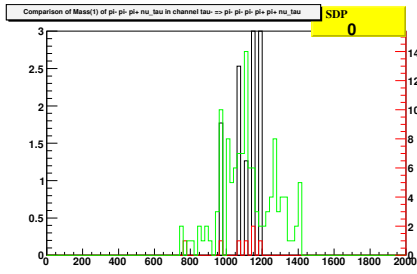
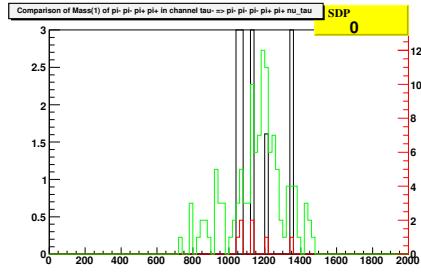
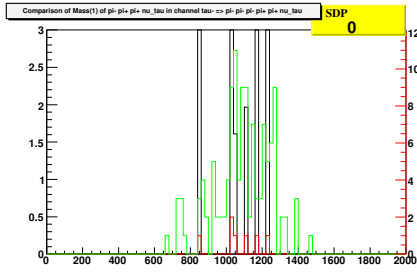
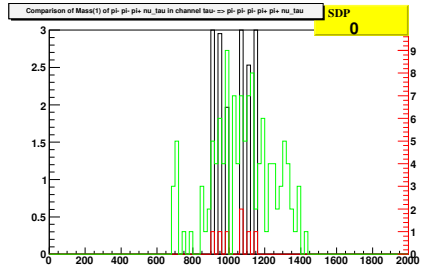
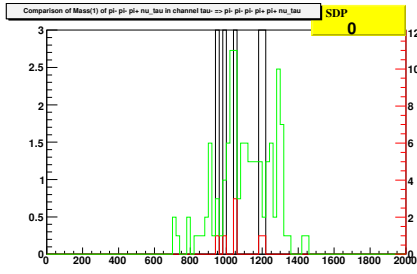
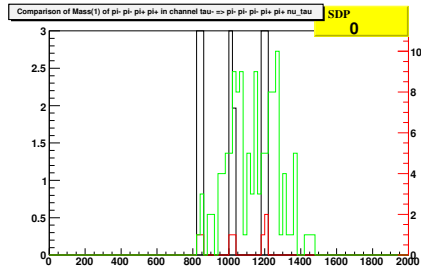
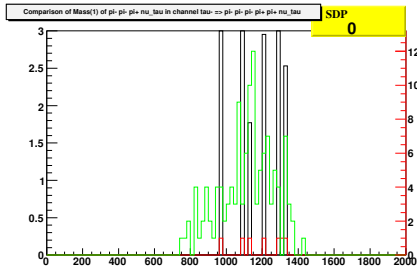
Number of events from generator 1: 7  
 Number of events from generator 2: 124

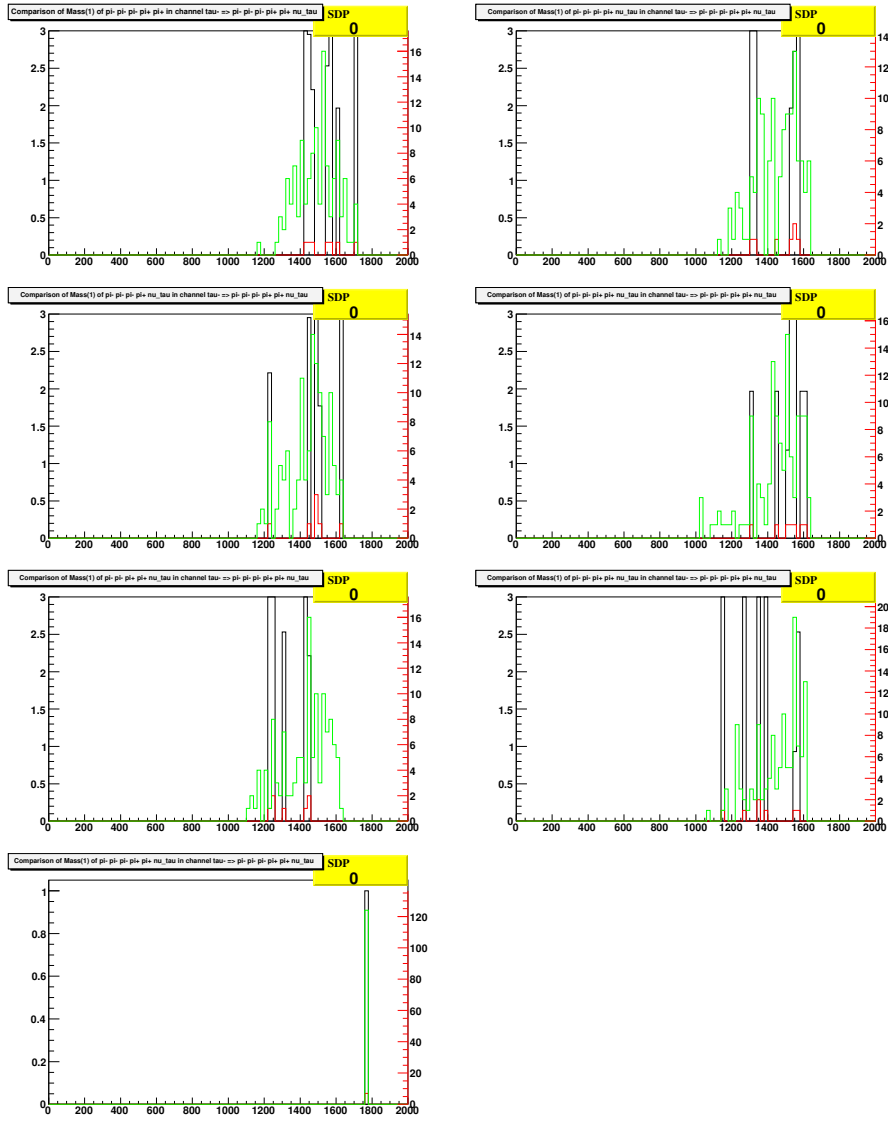










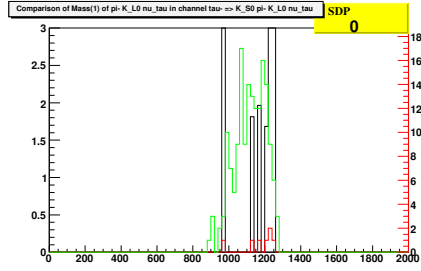
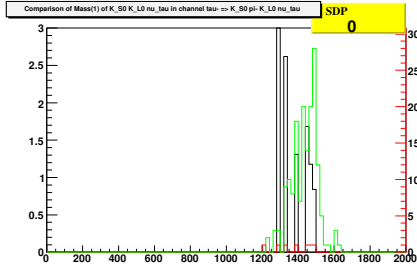
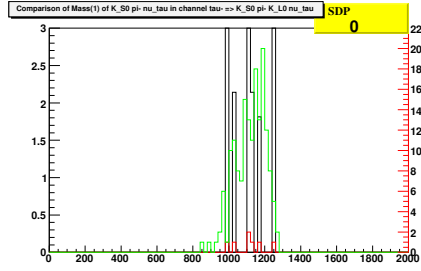
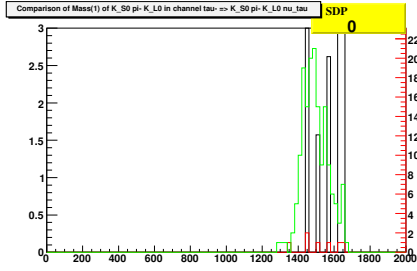
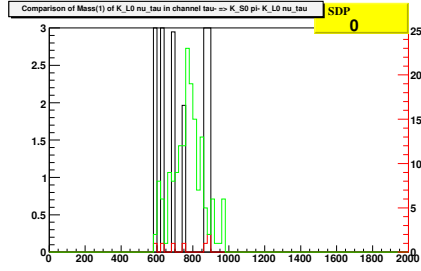
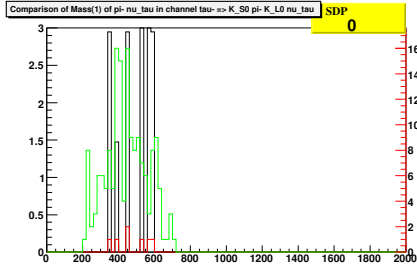
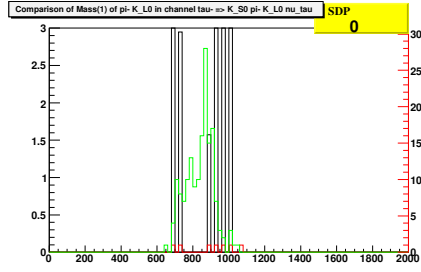
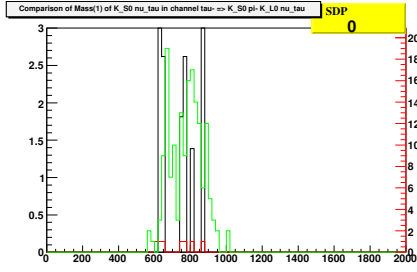
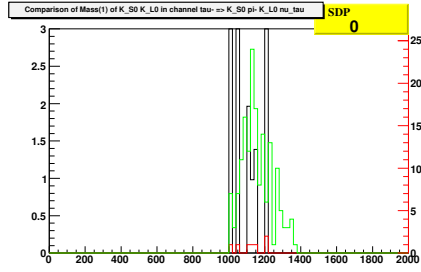
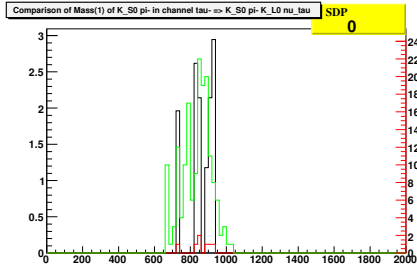


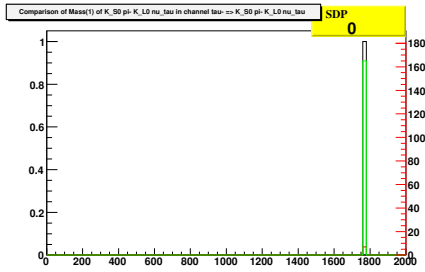
## 23 Decay Channel: $\tau^- \rightarrow K_S^0 \pi^- K_L^0 \nu_\tau$

Number of events from generator 1: 7

Number of events from generator 2: 165

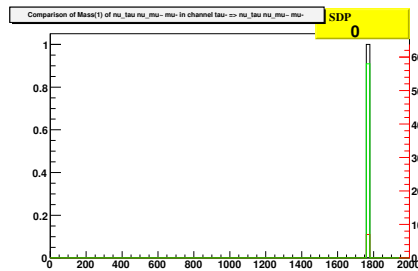
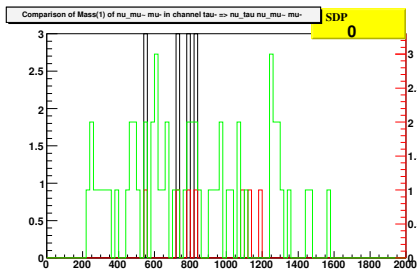
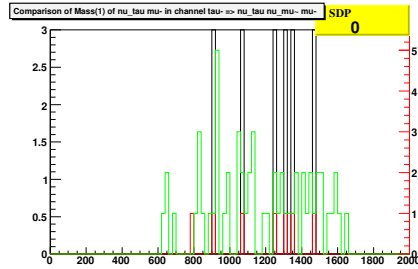
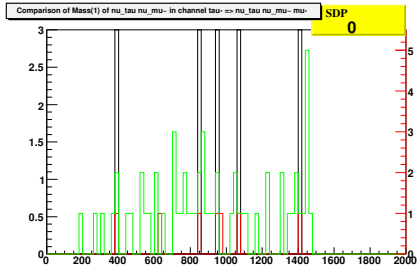






## 24 Decay Channel: $\tau^- \rightarrow \nu_\tau \tilde{\nu}_\mu \mu^-$

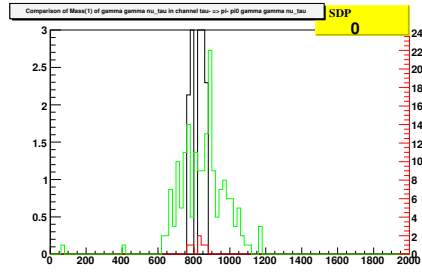
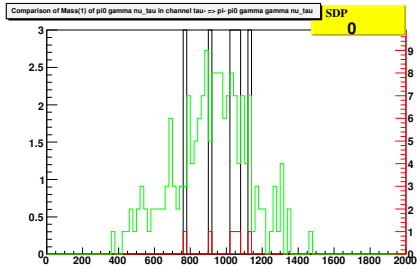
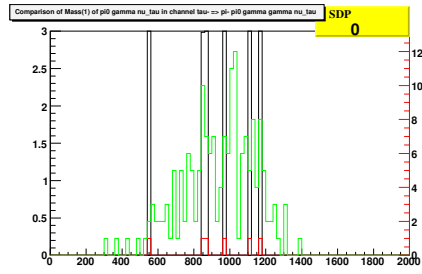
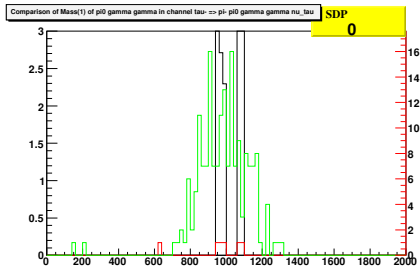
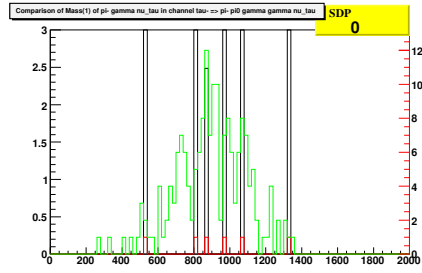
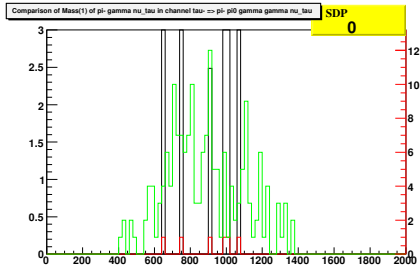
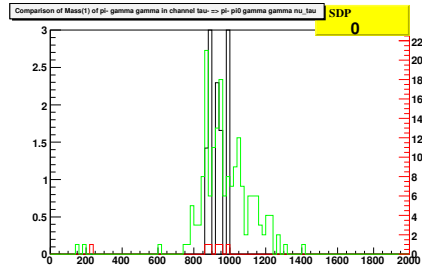
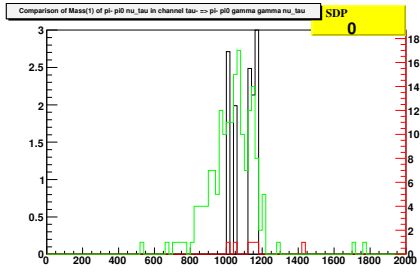
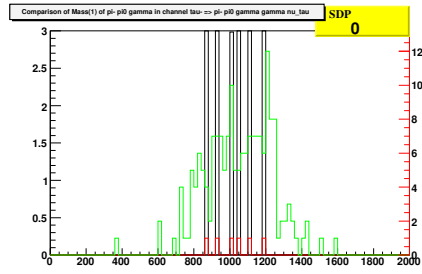
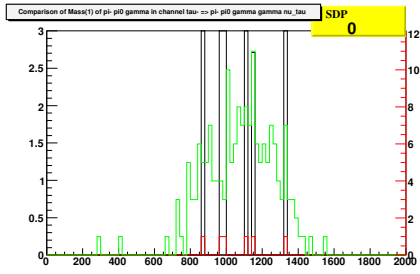
Number of events from generator 1: 7  
 Number of events from generator 2: 58

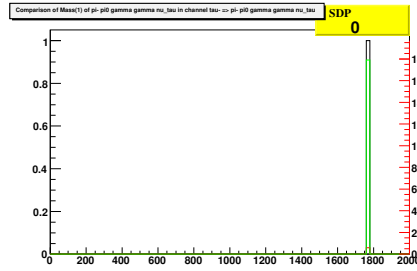
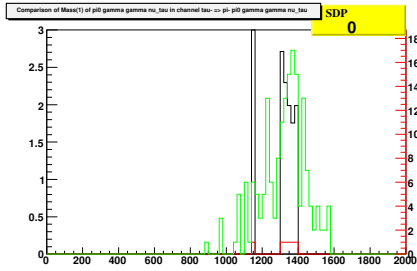
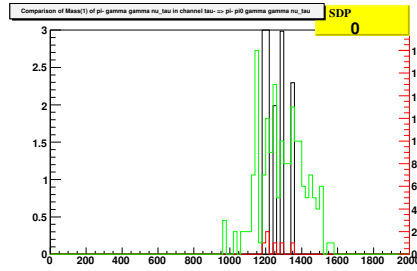
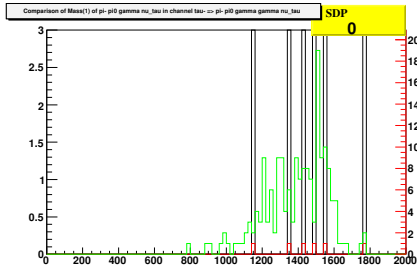
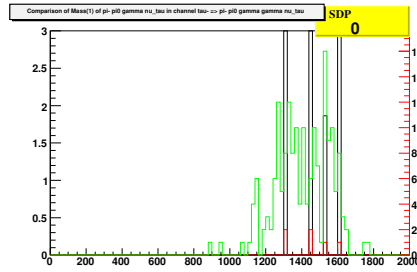
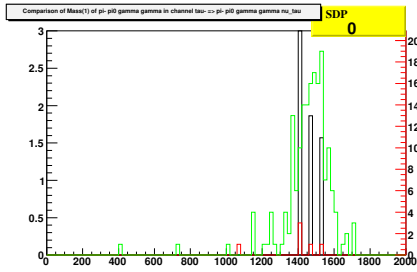


## 25 Decay Channel: $\tau^- \rightarrow \pi^- \pi^0 \gamma \nu_\tau$

Number of events from generator 1: 6  
 Number of events from generator 2: 179



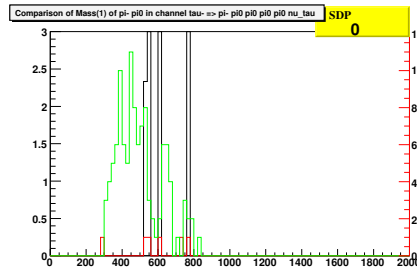
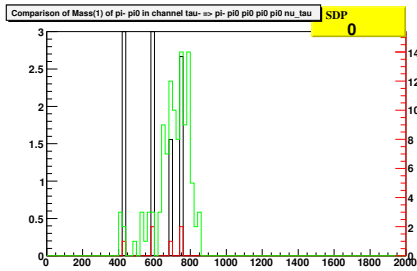


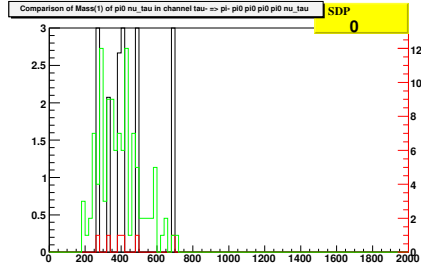
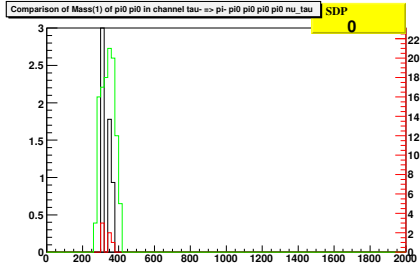
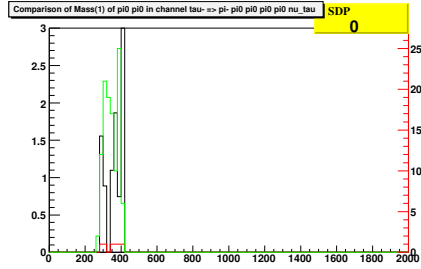
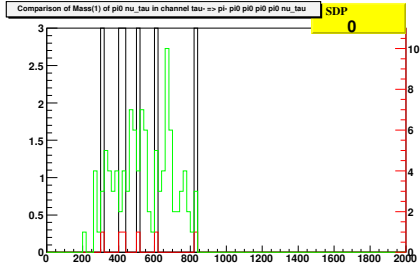
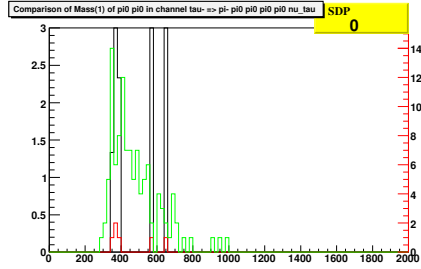
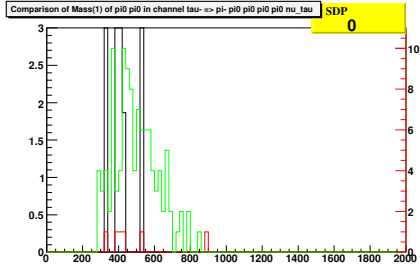
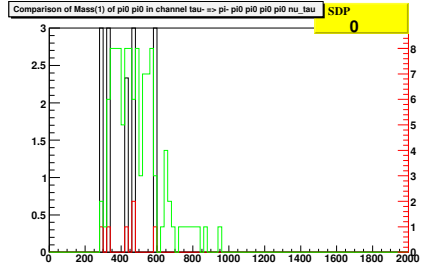
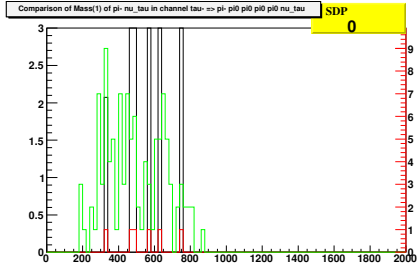
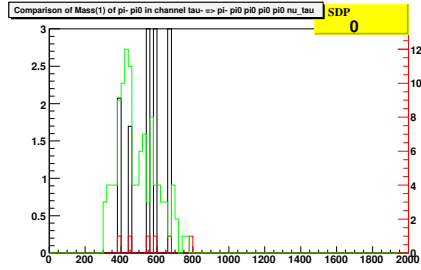
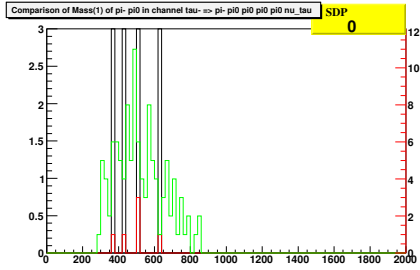


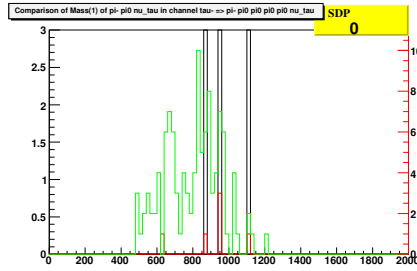
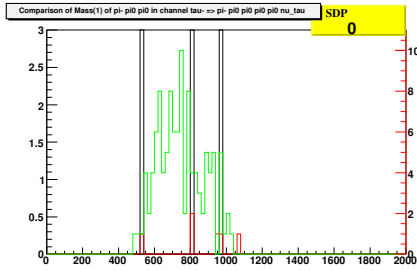
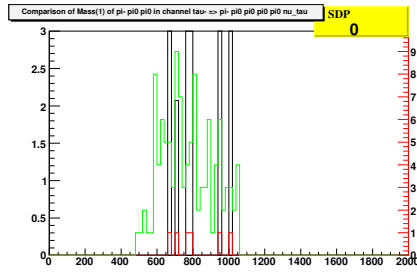
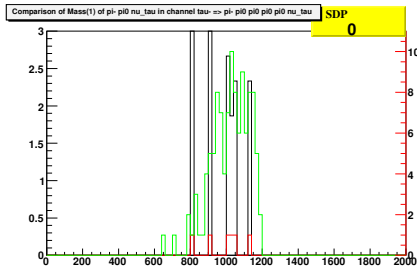
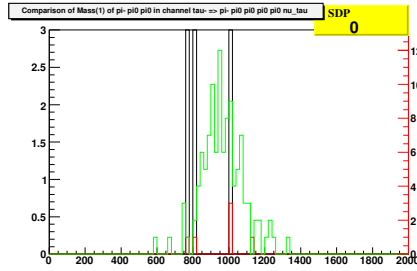
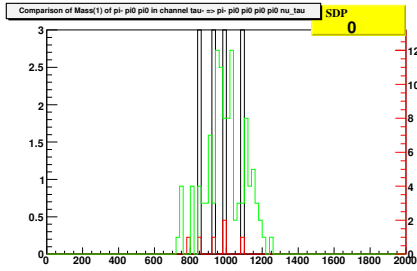
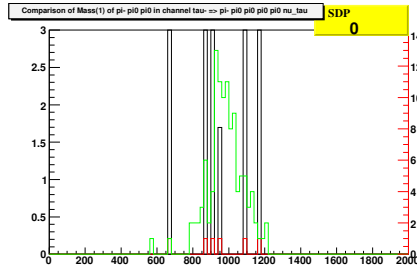
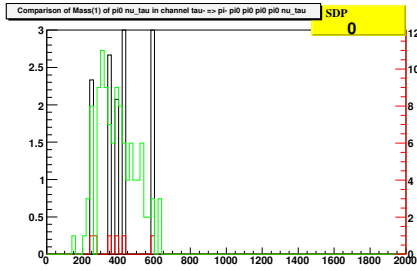
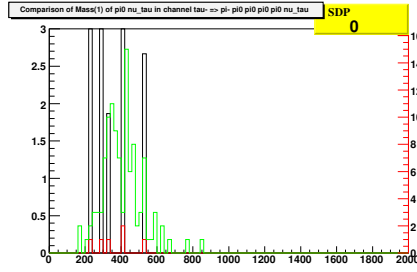
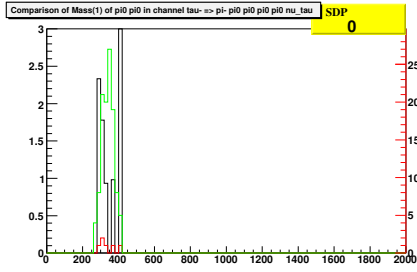
## 26 Decay Channel: $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \pi^0 \pi^0 \nu_\tau$

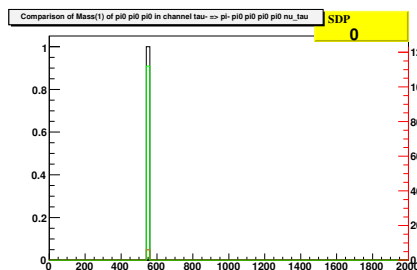
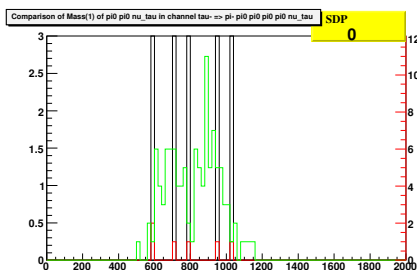
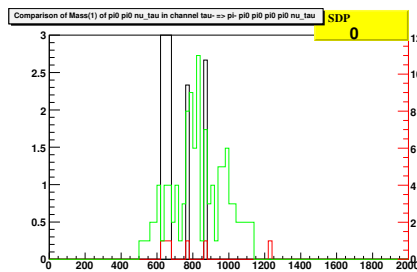
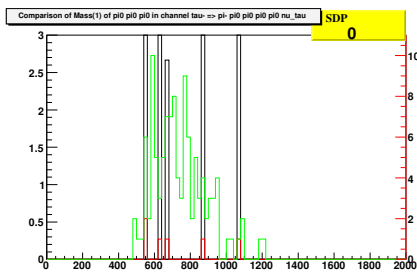
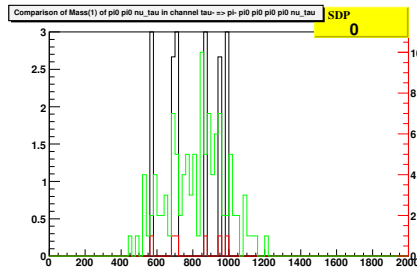
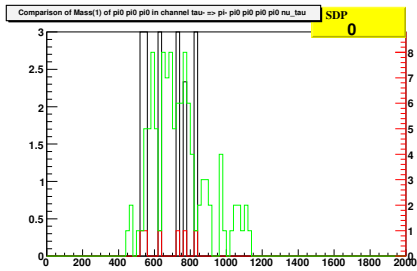
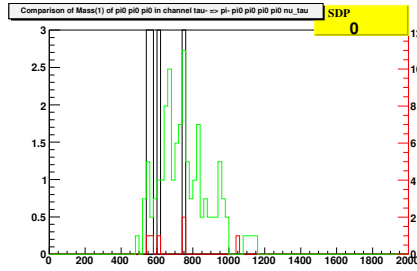
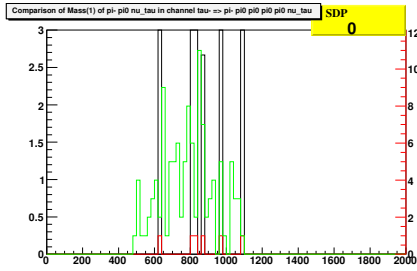
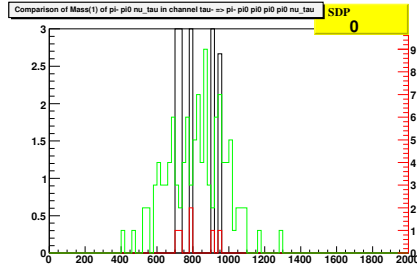
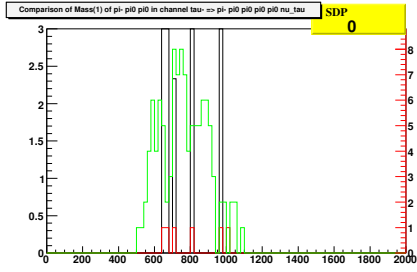
Number of events from generator 1: 6

Number of events from generator 2: 112

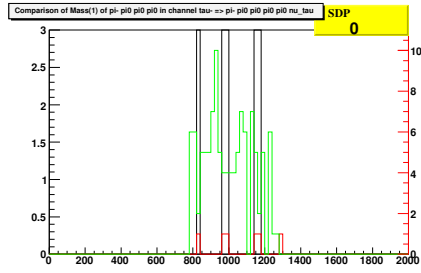
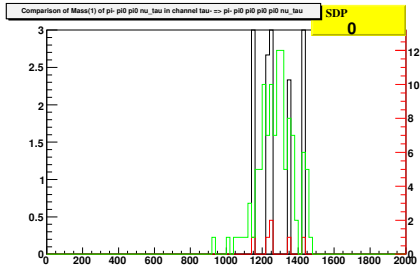
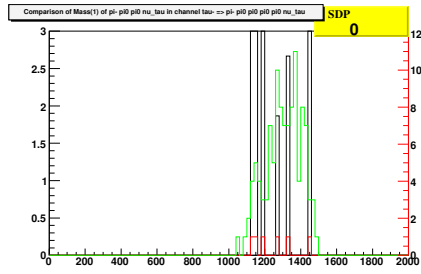
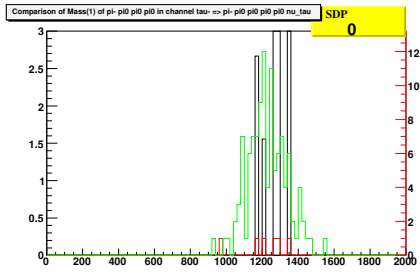
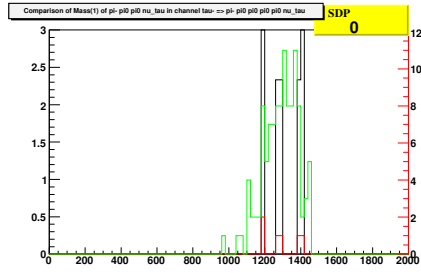
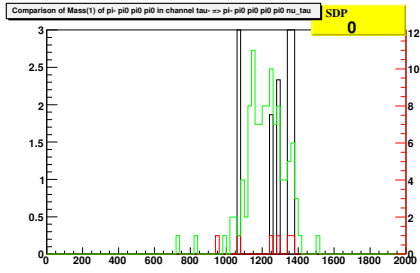
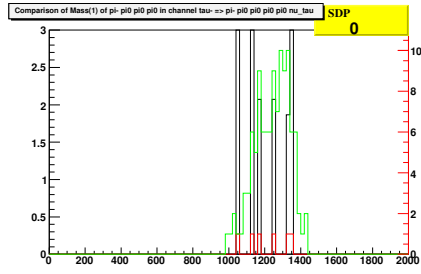
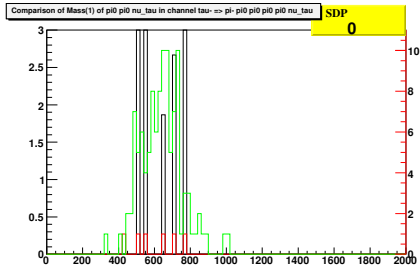
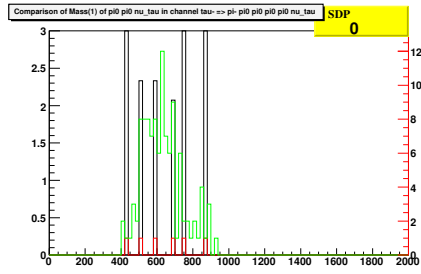
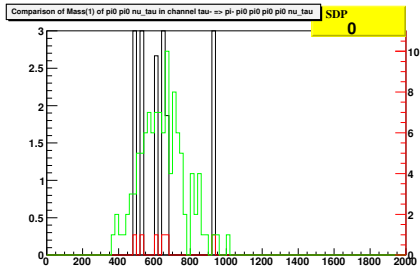


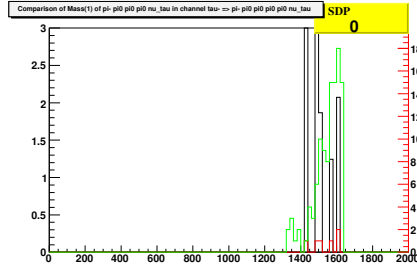
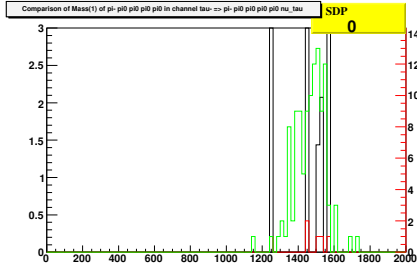
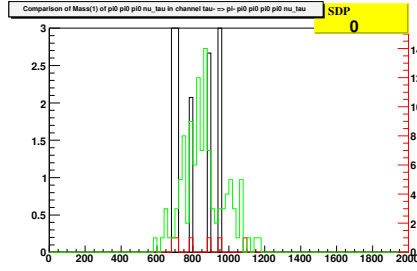
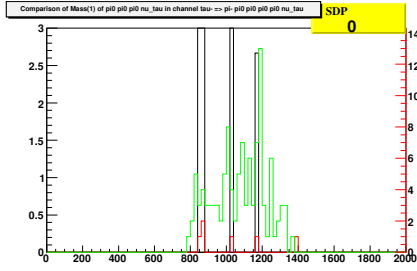
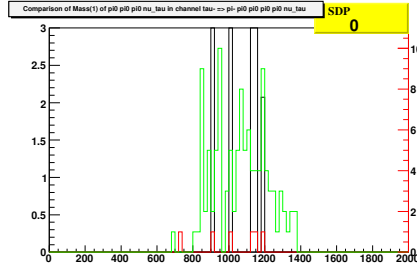
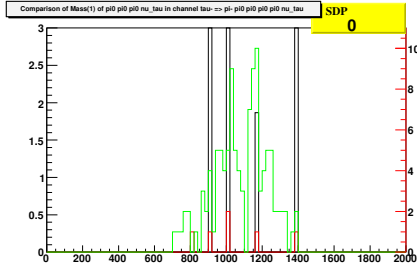
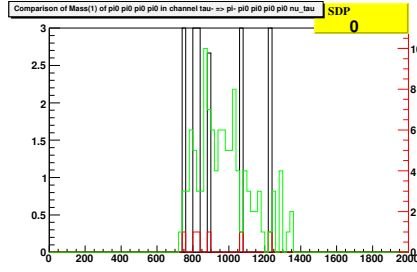
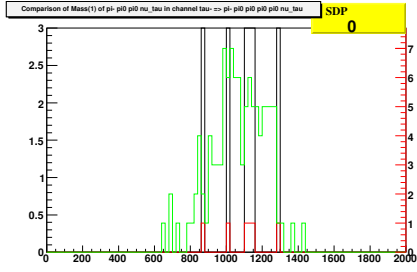
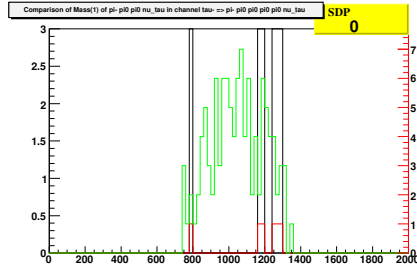
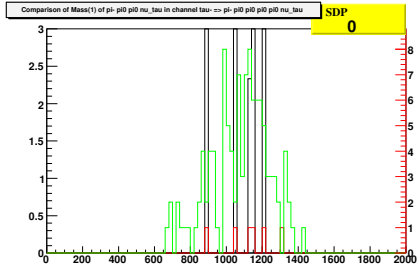


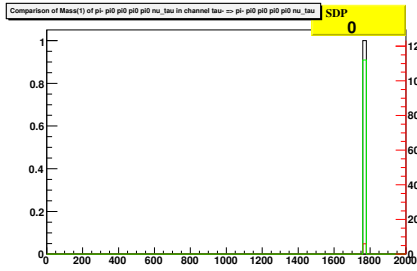
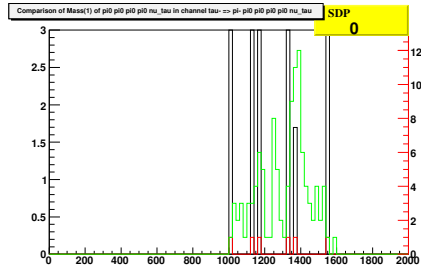
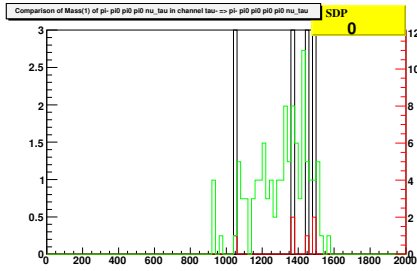
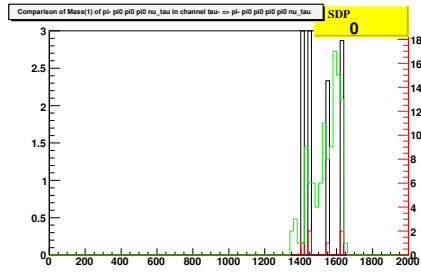
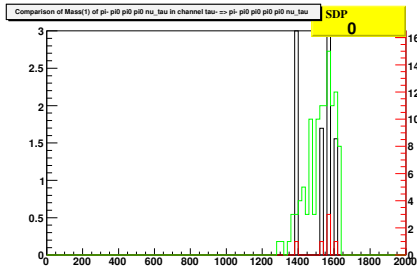








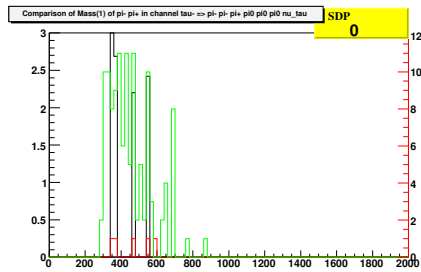
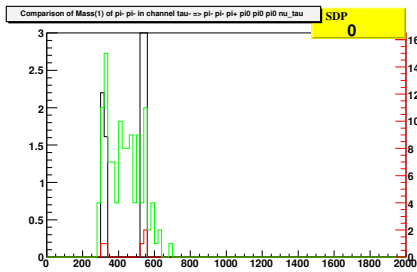


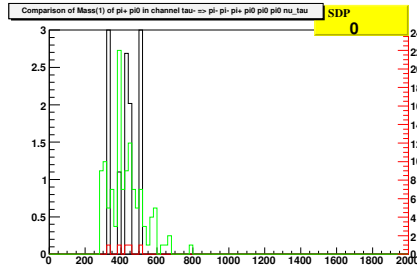
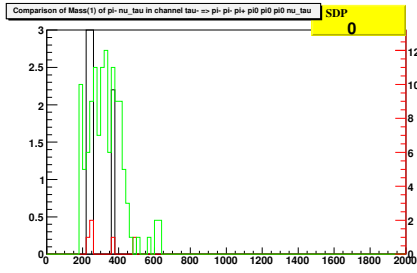
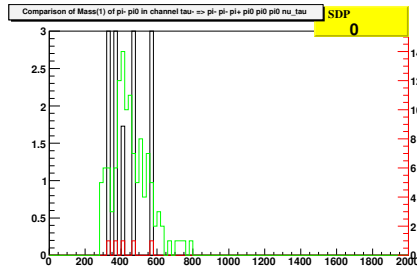
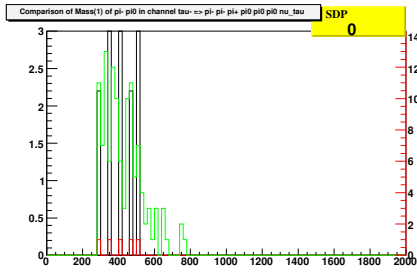
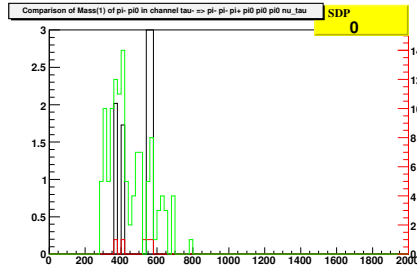
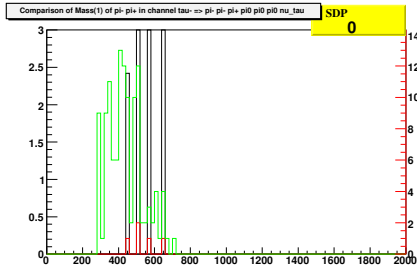
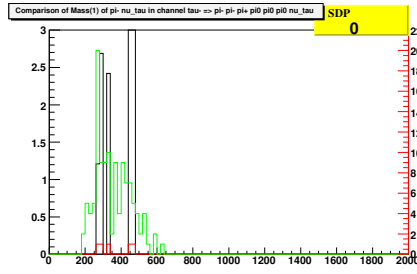
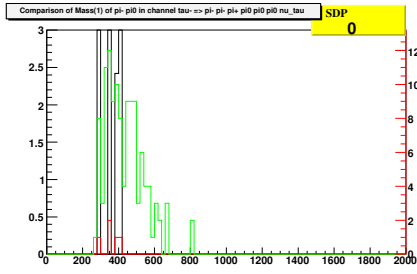
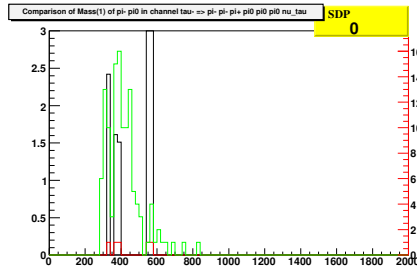
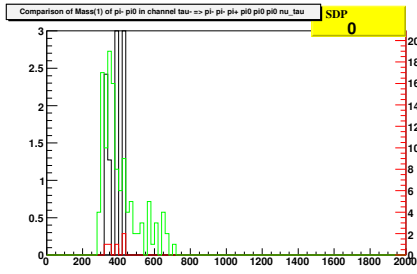


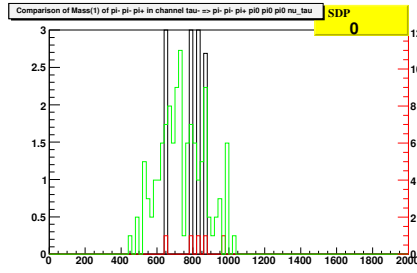
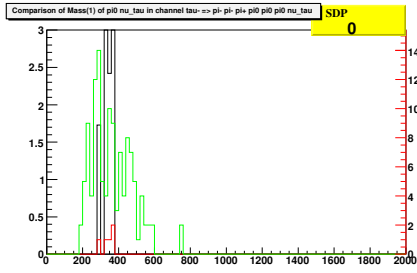
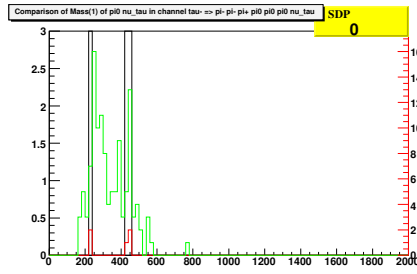
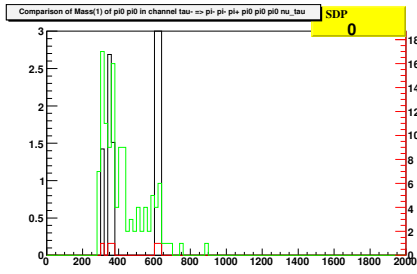
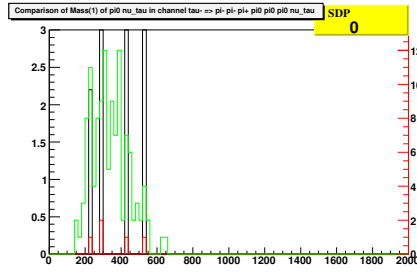
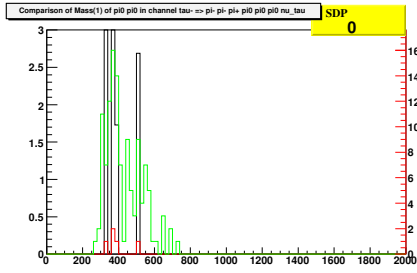
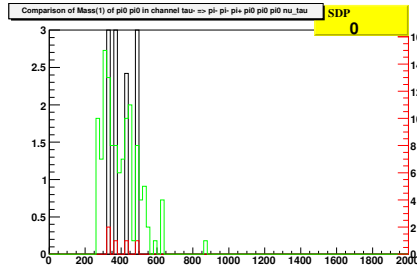
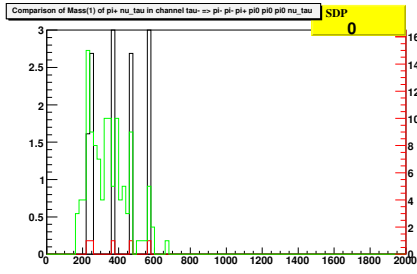
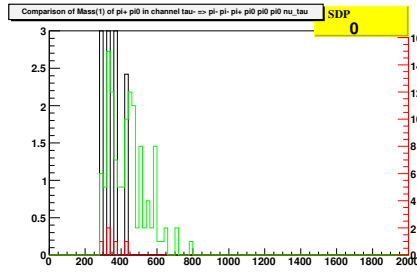
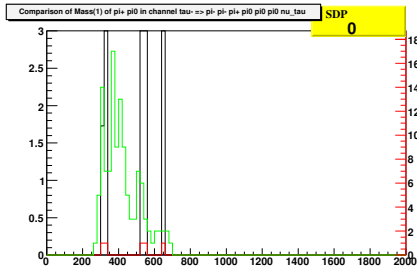
## 27 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \pi^0 \pi^0 \nu_\tau$

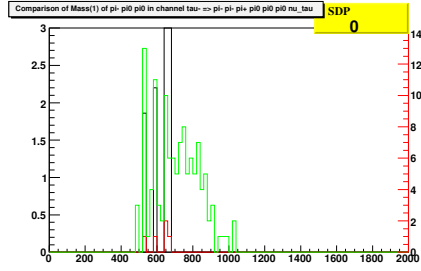
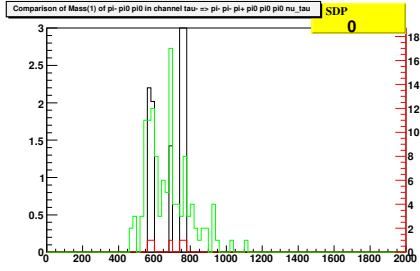
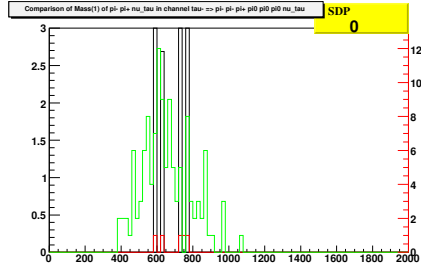
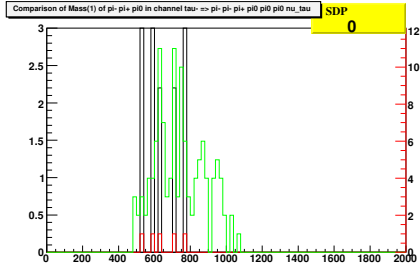
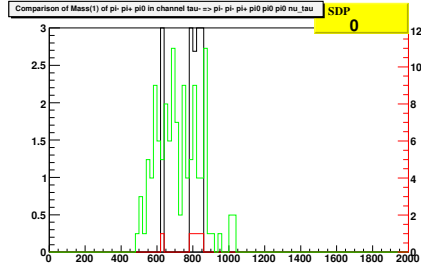
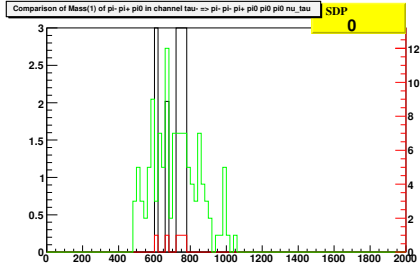
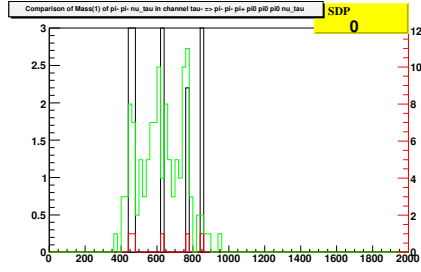
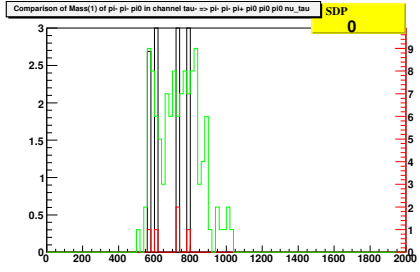
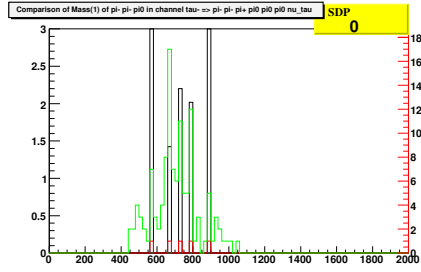
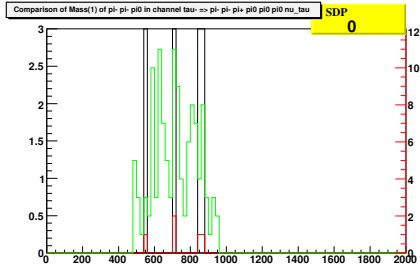
Number of events from generator 1: 5

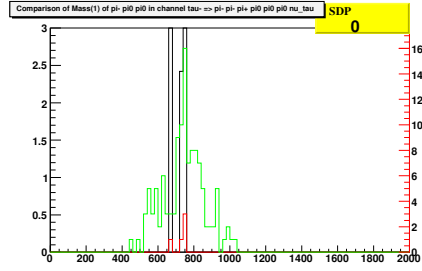
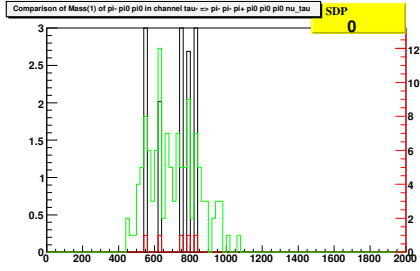
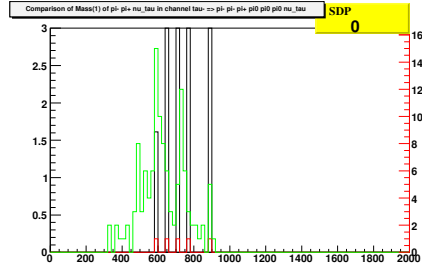
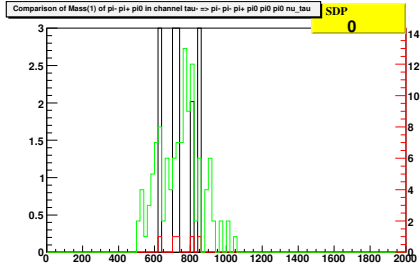
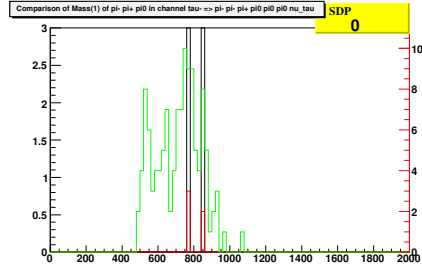
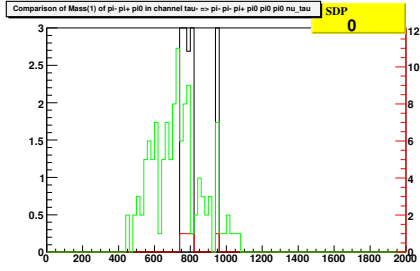
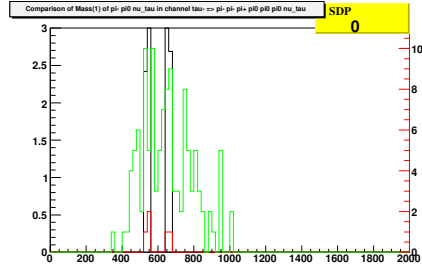
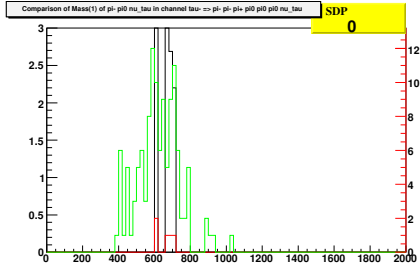
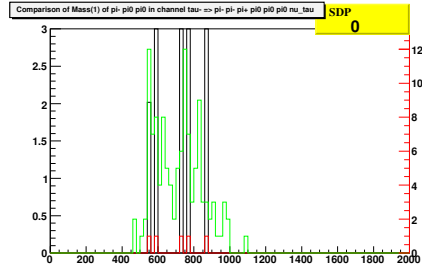
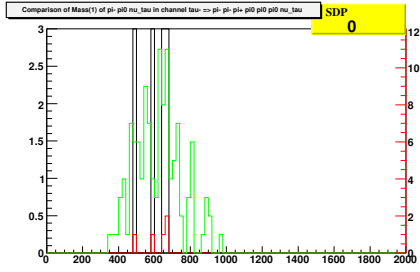
Number of events from generator 2: 121

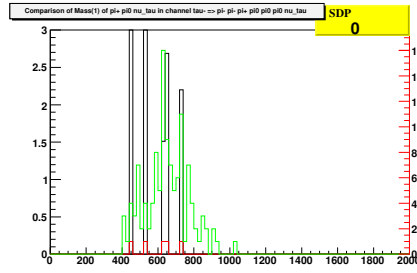
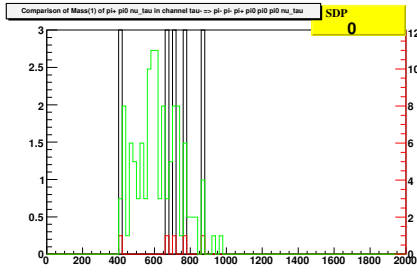
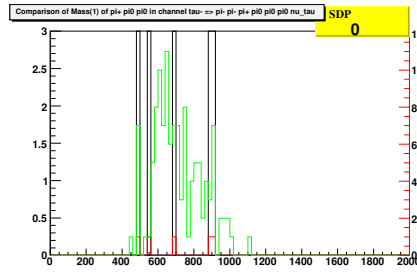
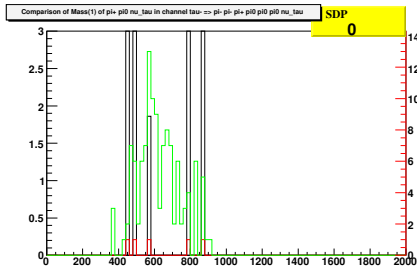
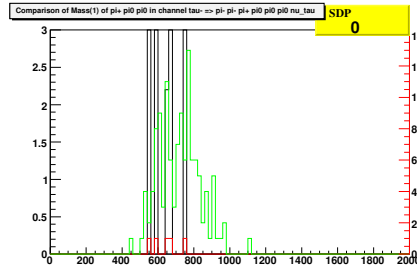
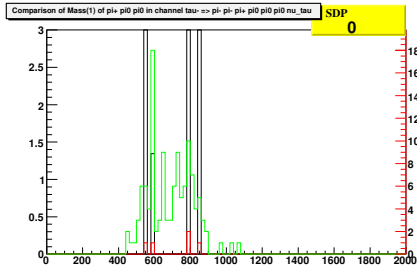
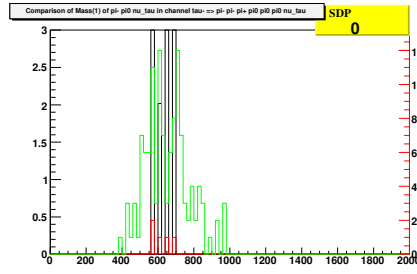
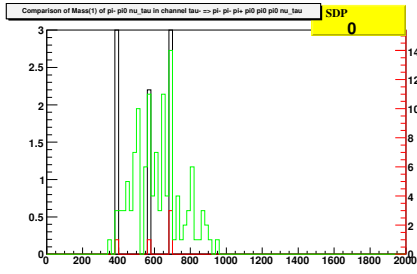
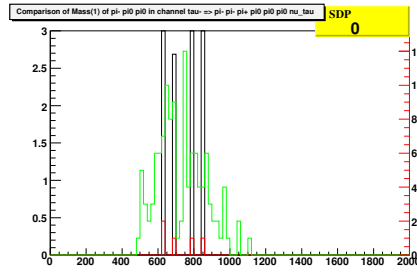
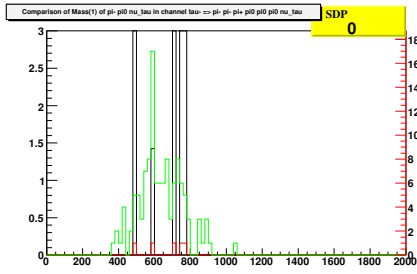




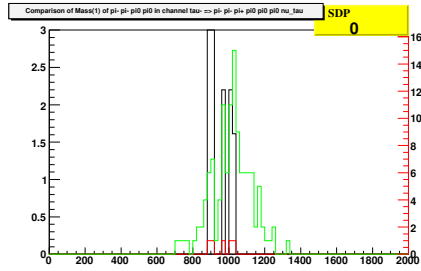
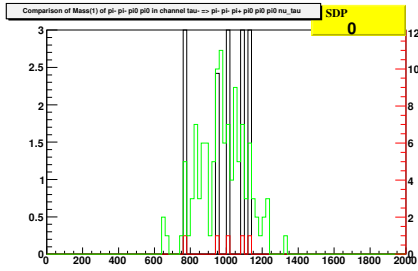
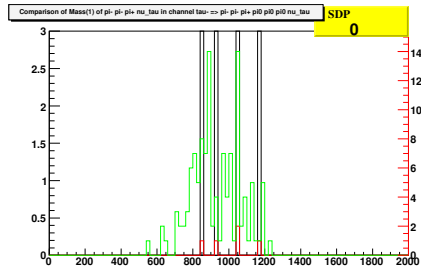
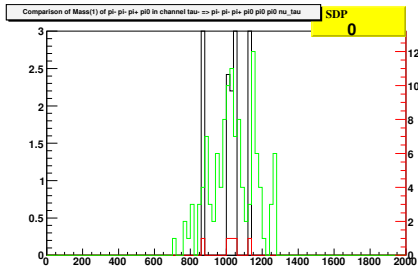
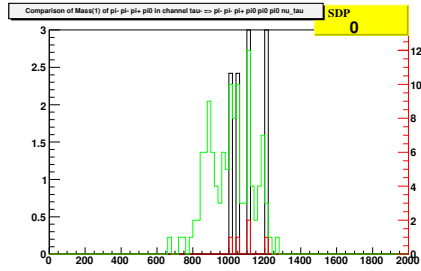
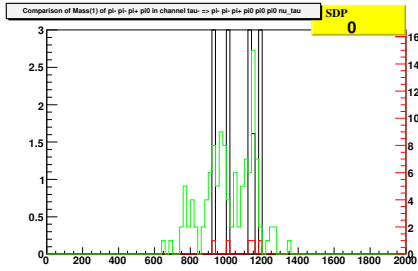
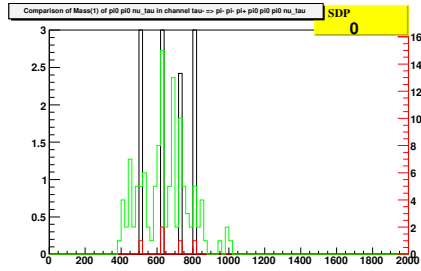
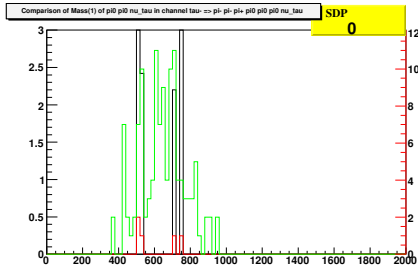
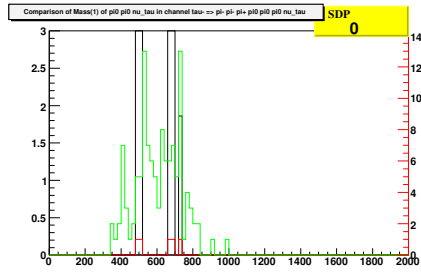
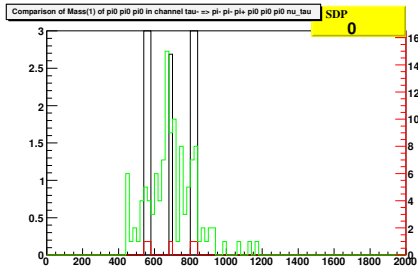




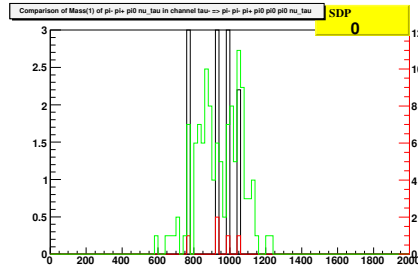
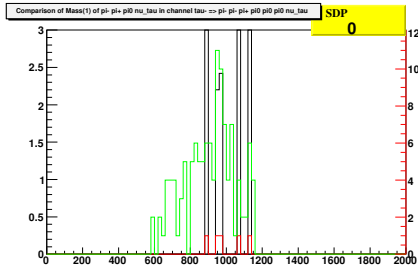
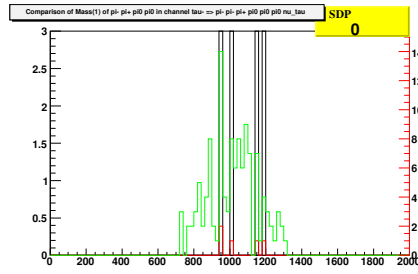
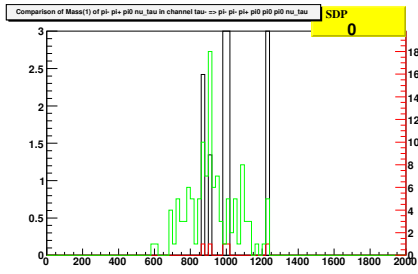
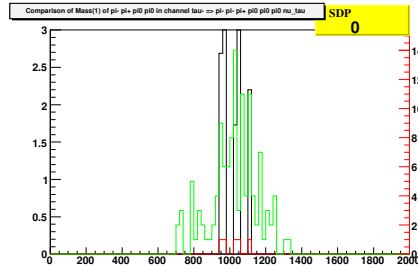
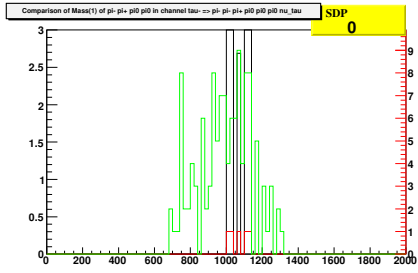
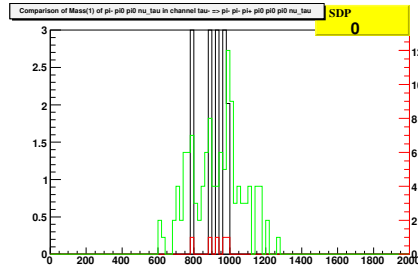
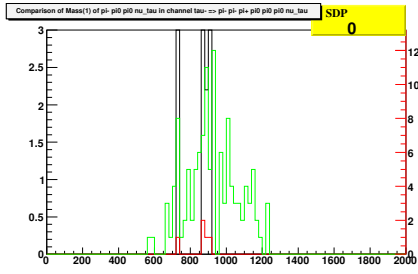
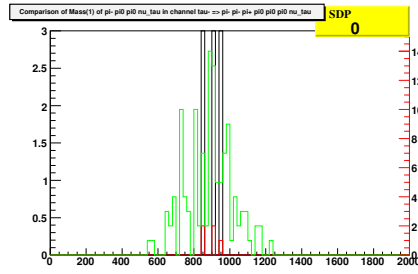
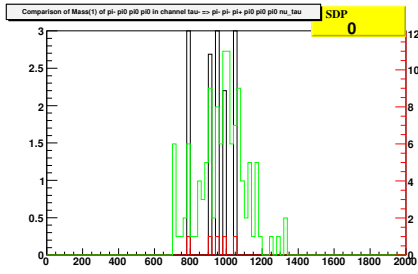


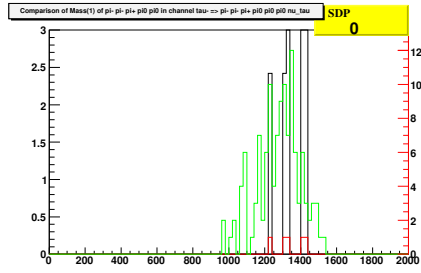
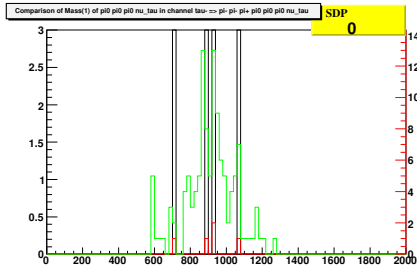
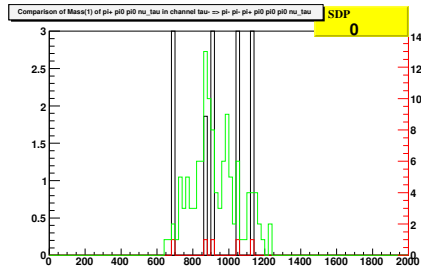
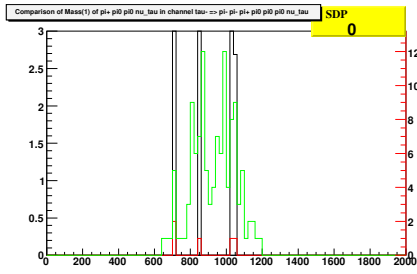
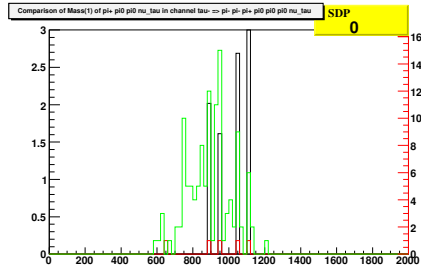
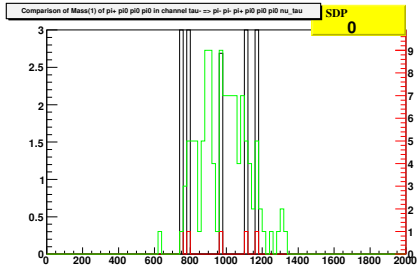
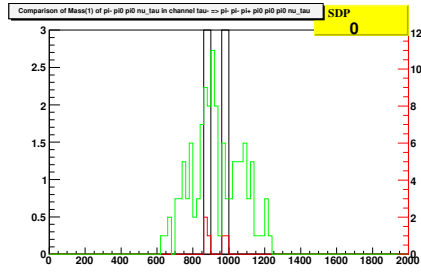
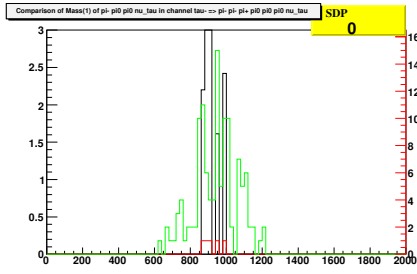
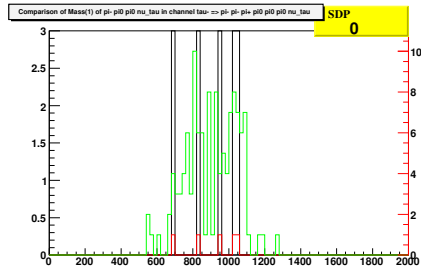
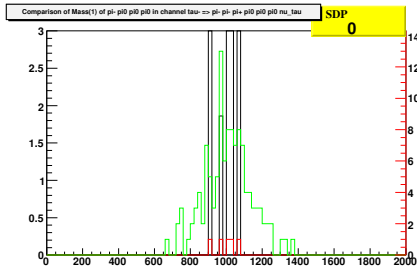


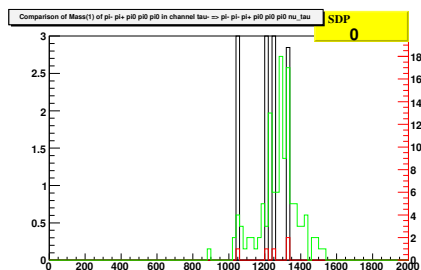
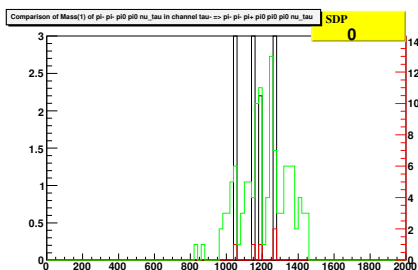
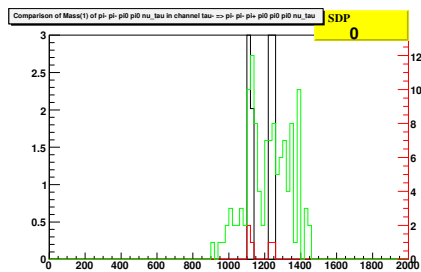
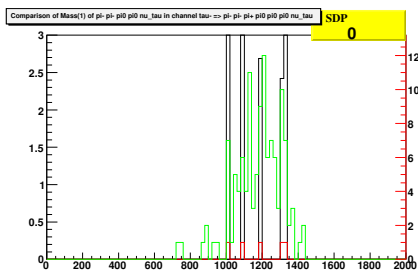
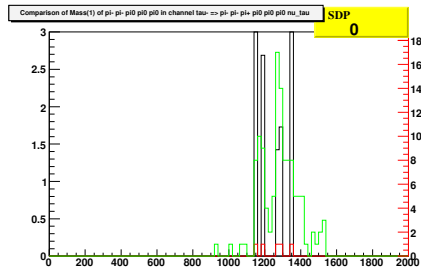
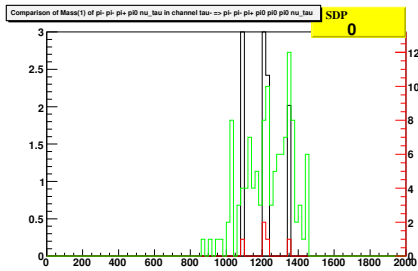
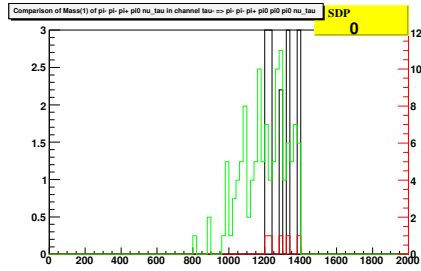
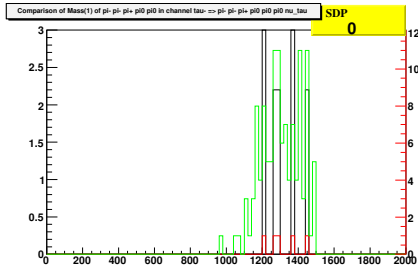
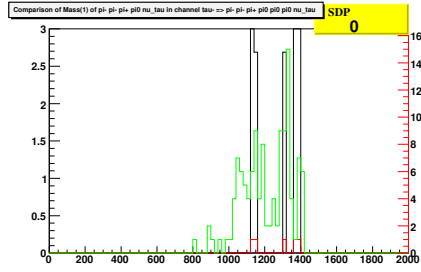
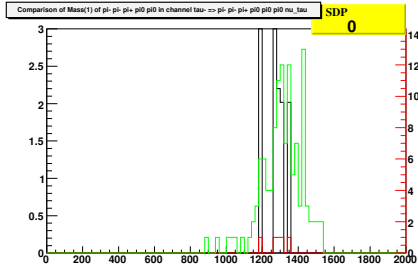


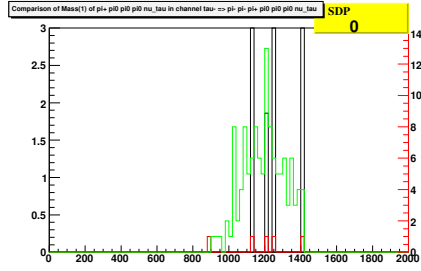
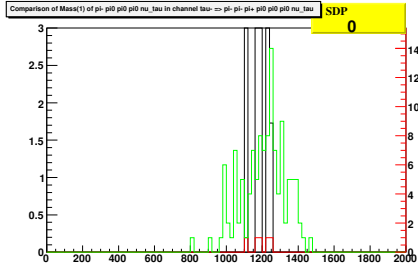
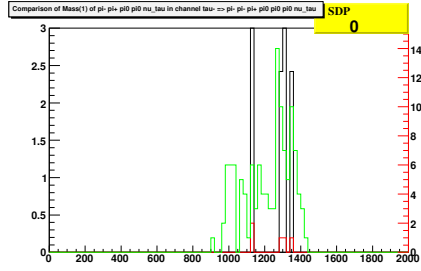
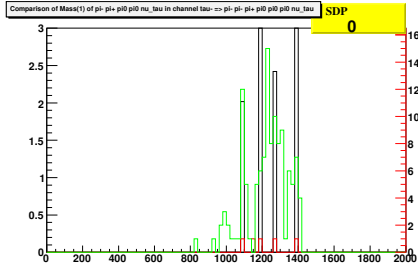
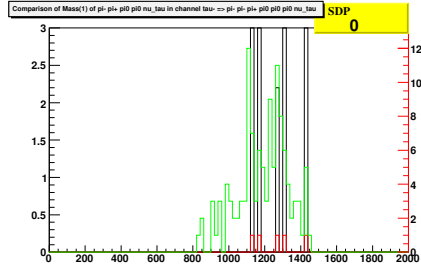
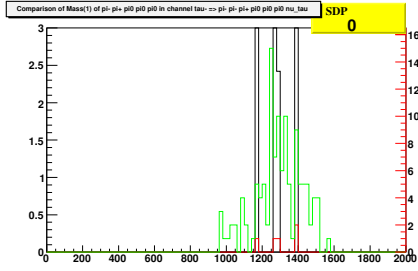
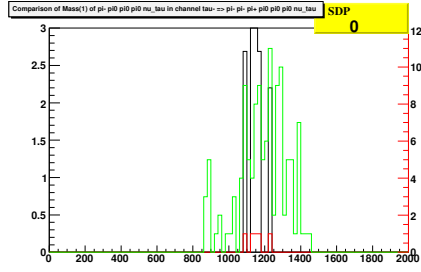
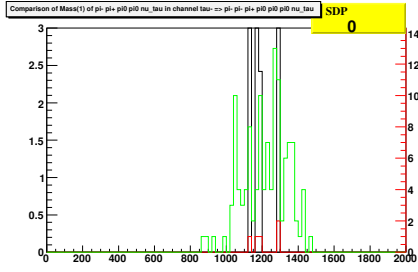
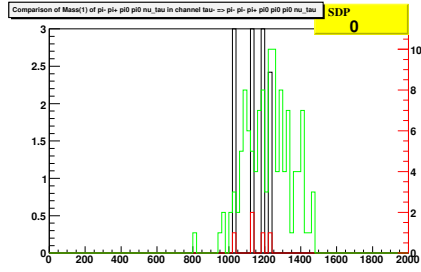
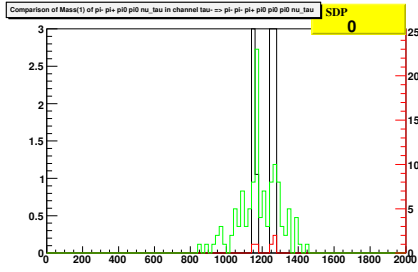


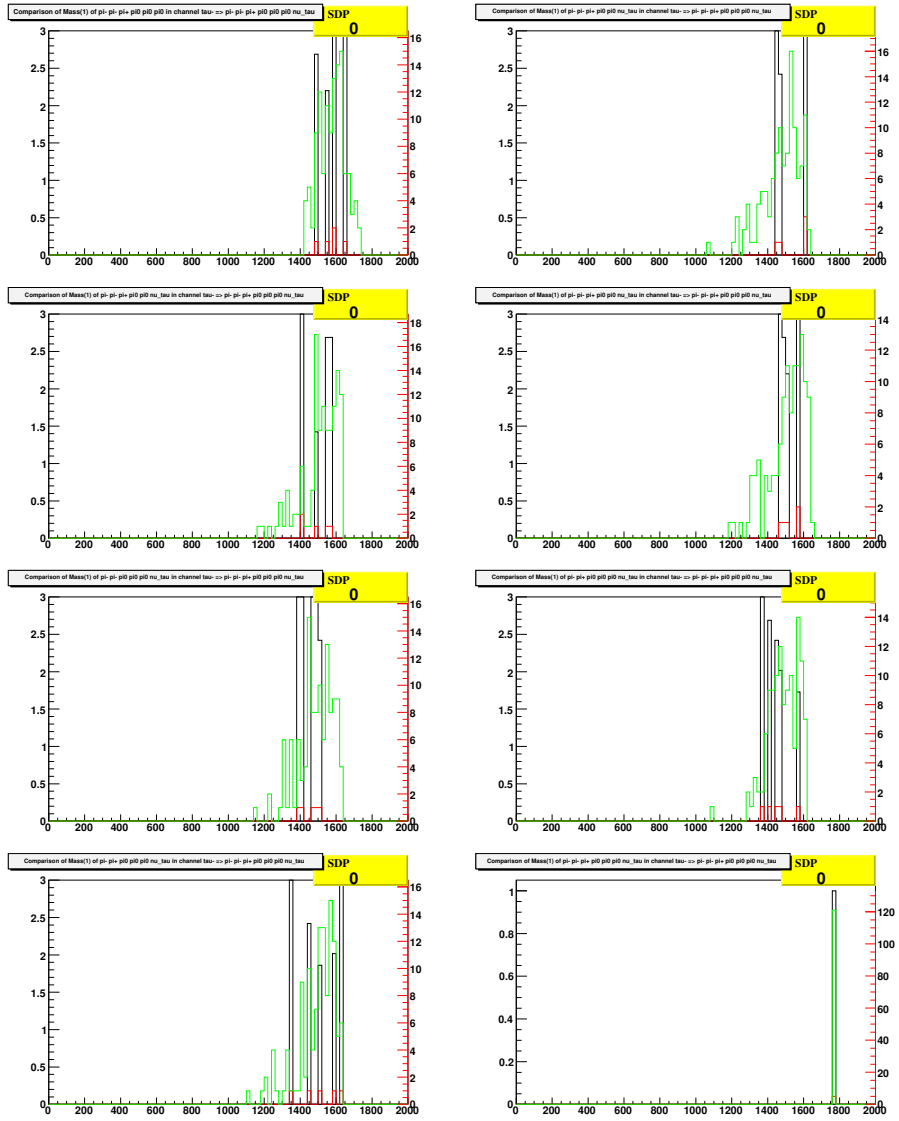








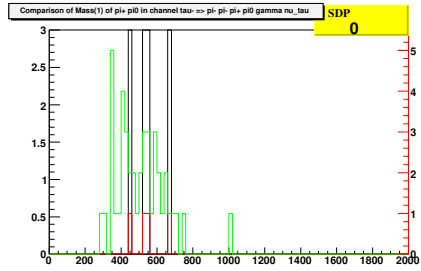
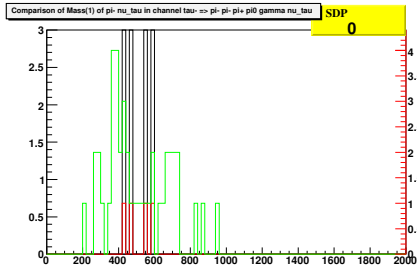
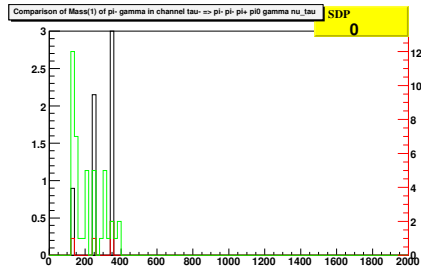
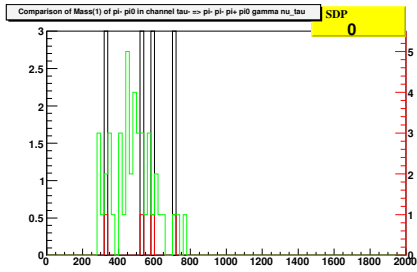
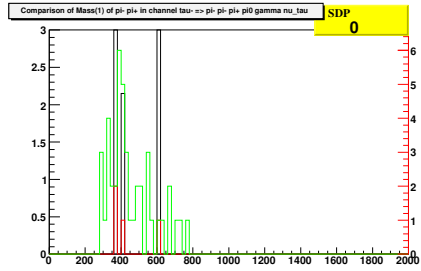
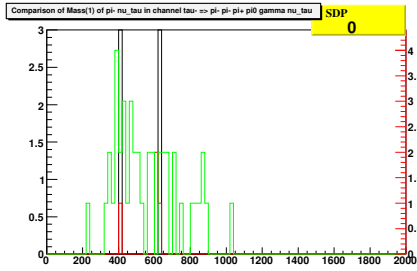
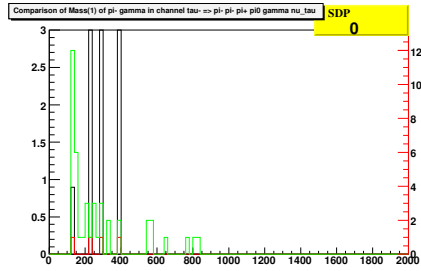
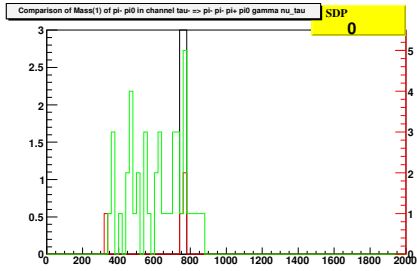
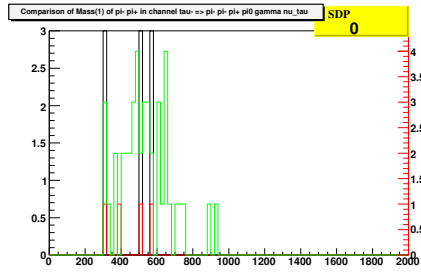
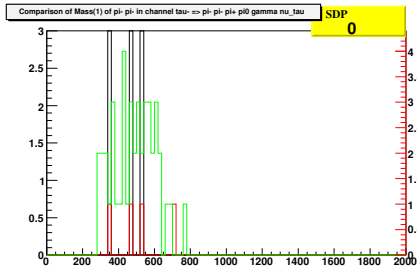




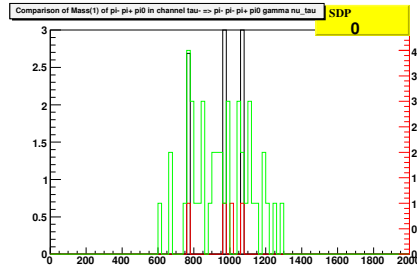
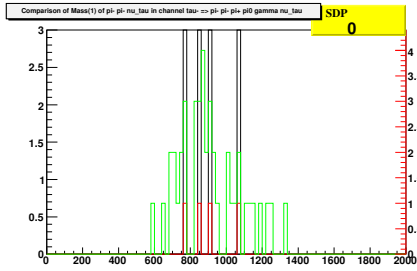
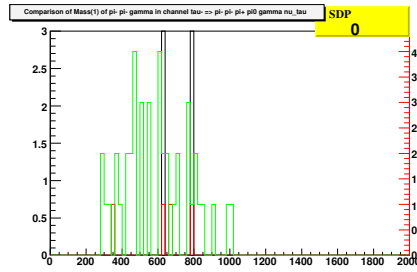
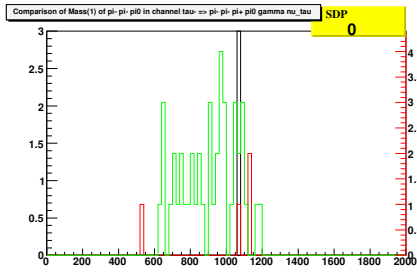
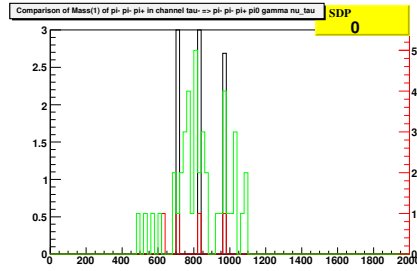
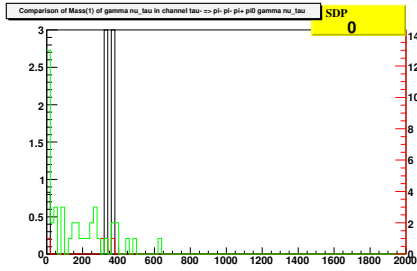
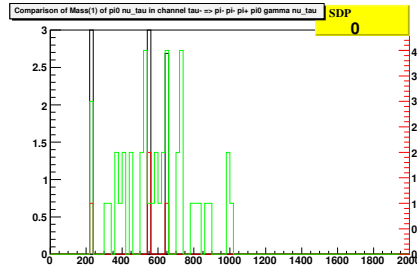
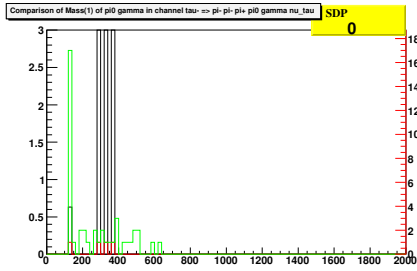
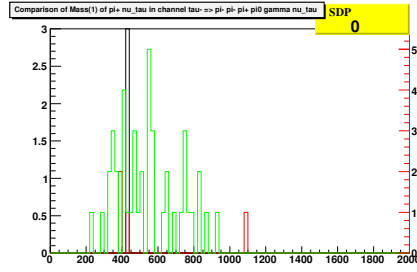
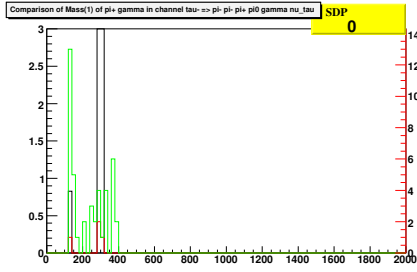
## 28 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^+ \pi^0 \nu_\tau$

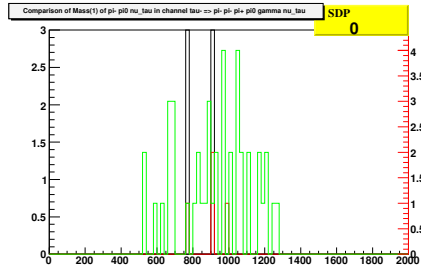
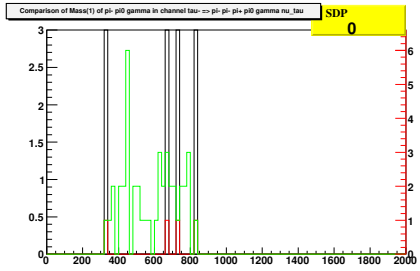
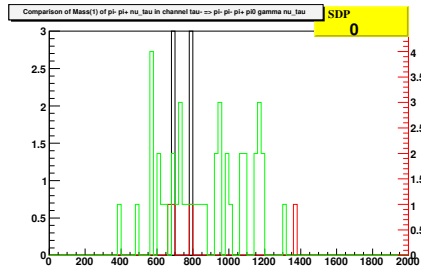
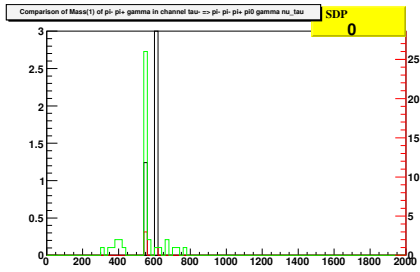
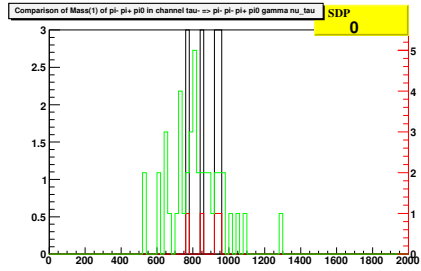
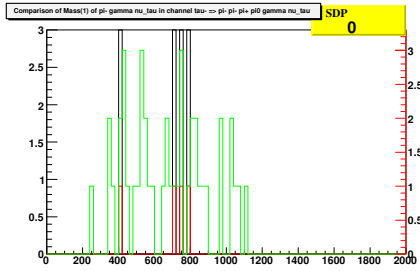
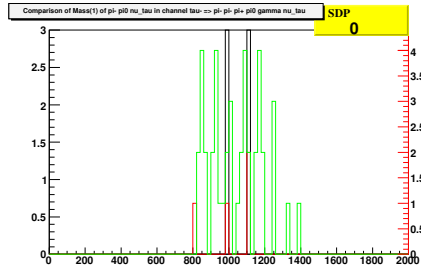
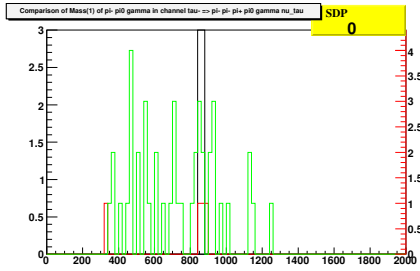
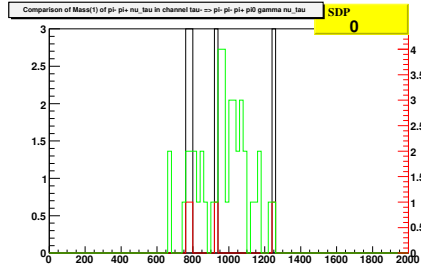
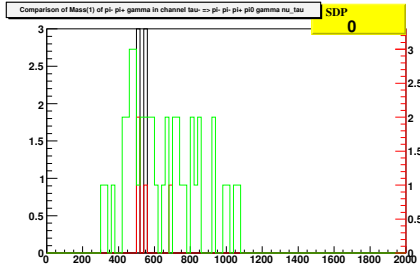
Number of events from generator 1: 4

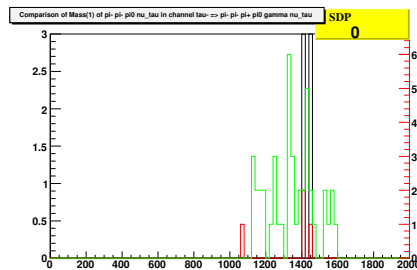
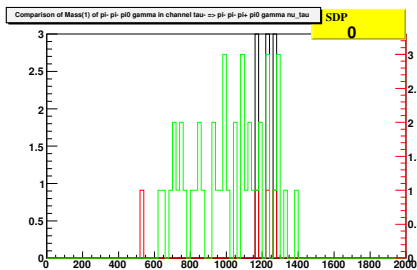
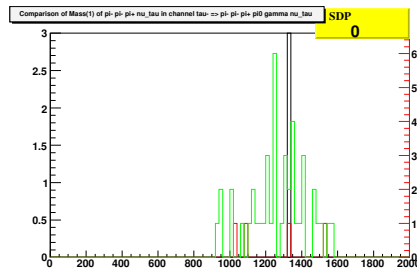
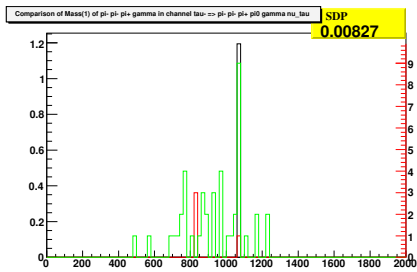
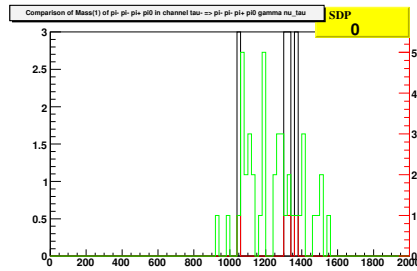
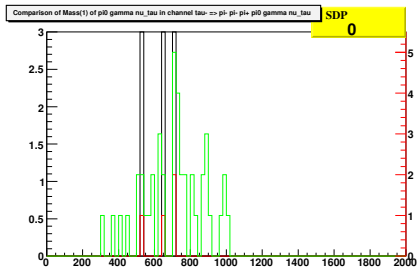
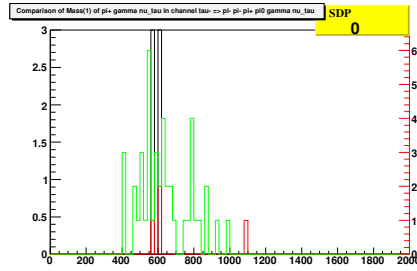
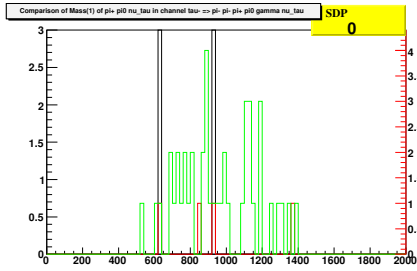
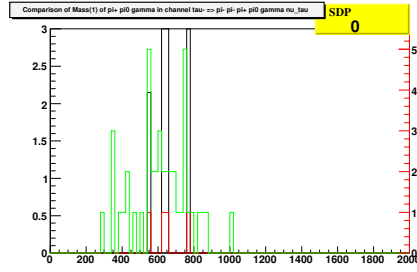
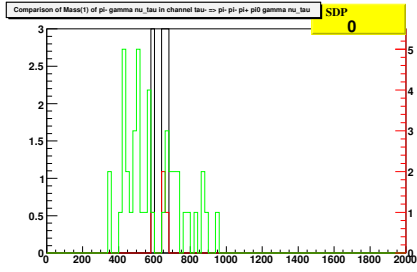
Number of events from generator 2: 43

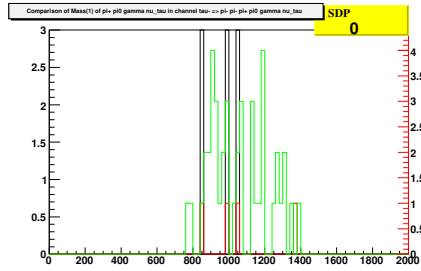
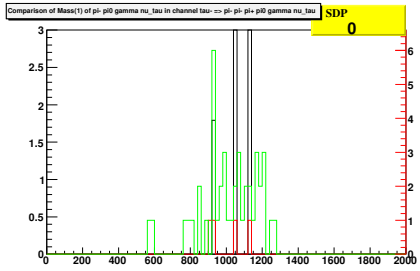
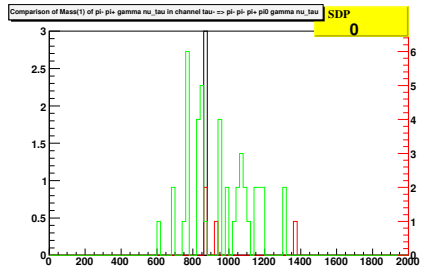
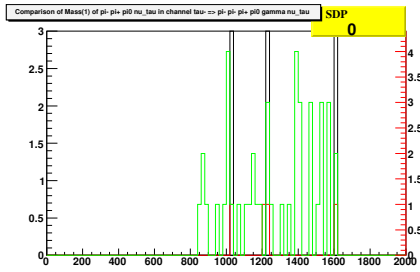
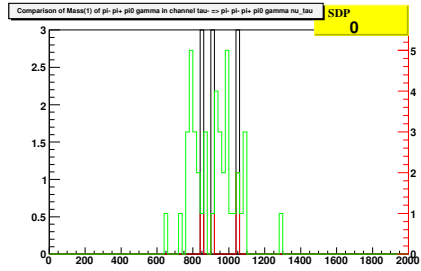
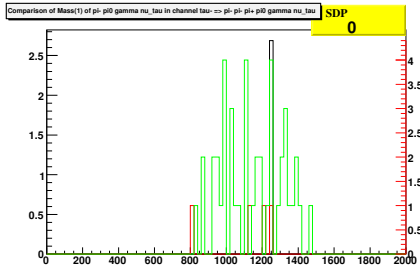
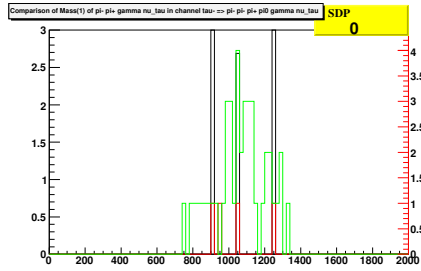
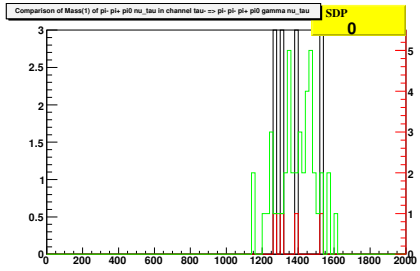
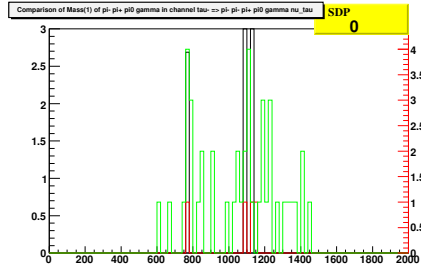
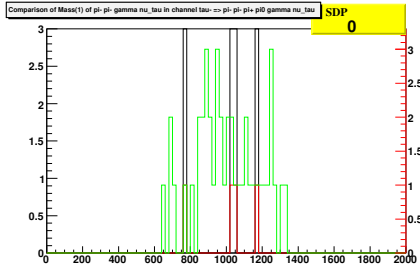


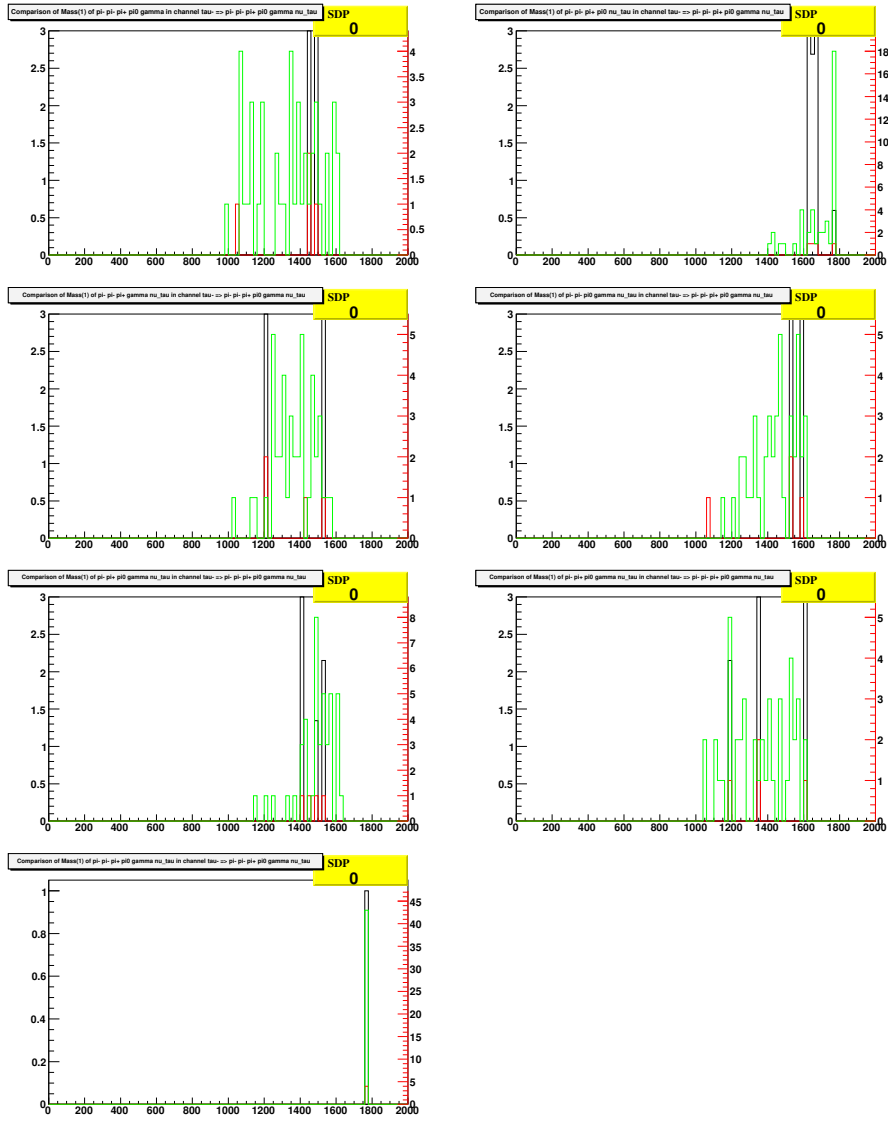






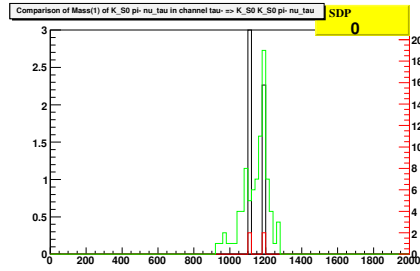
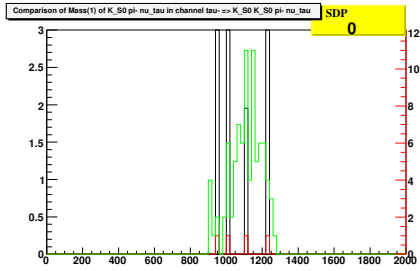
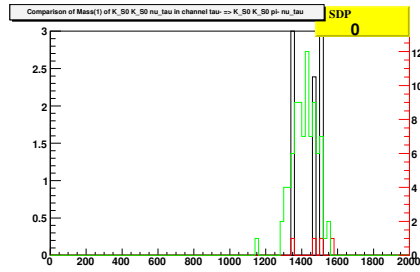
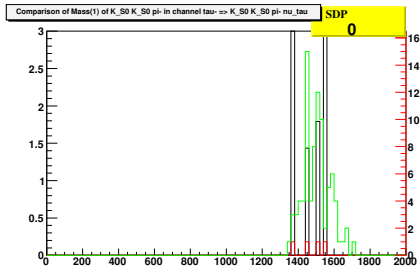
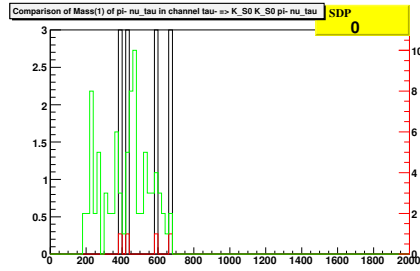
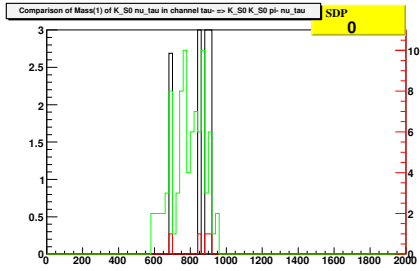
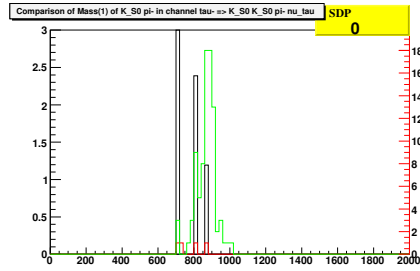
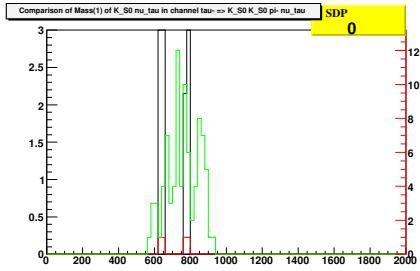
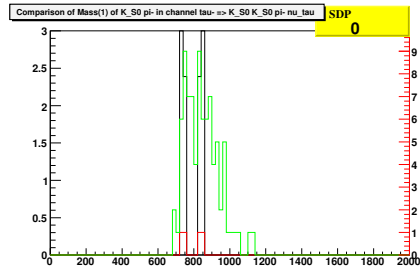
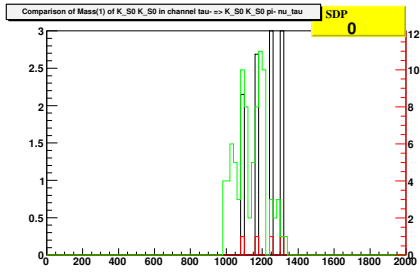


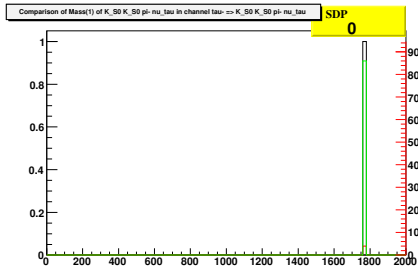




## 29 Decay Channel: $\tau^- \rightarrow K_S^0 K_S^0 \pi^- \nu_\tau$

Number of events from generator 1: 4  
 Number of events from generator 2: 86

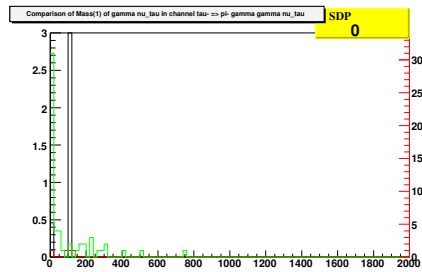
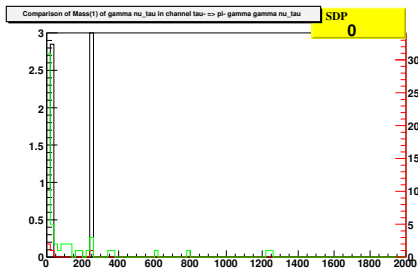
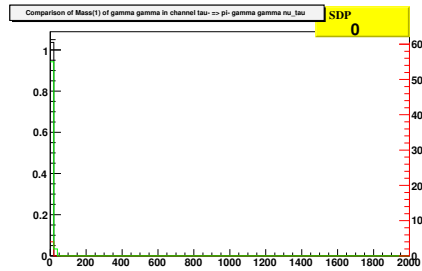
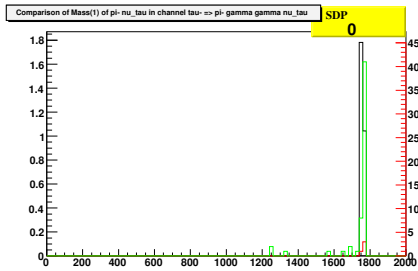
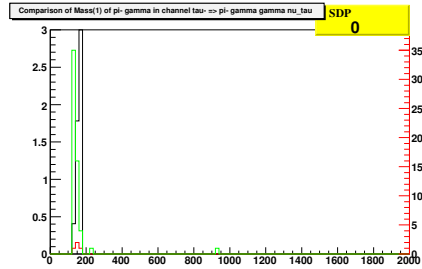
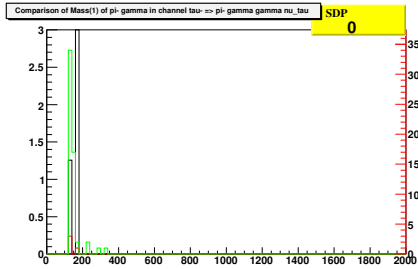


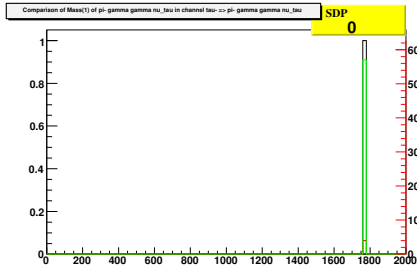
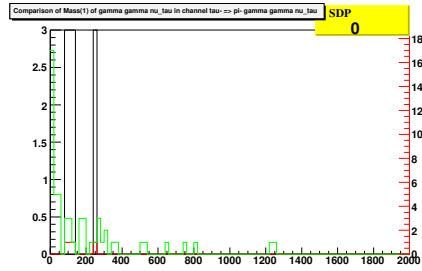
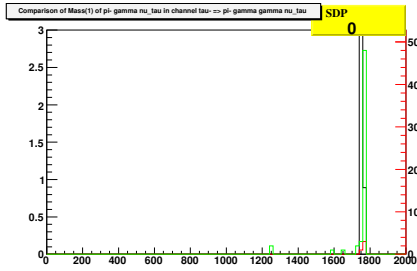
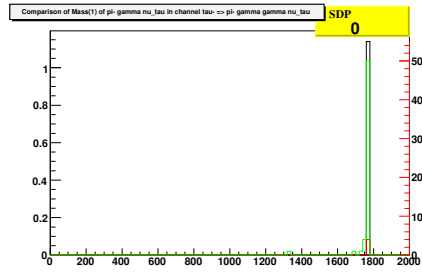
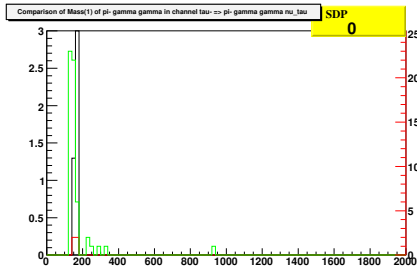


### 30 Decay Channel: $\tau^- \rightarrow \pi^- \gamma \gamma \nu_\tau$

Number of events from generator 1: 4

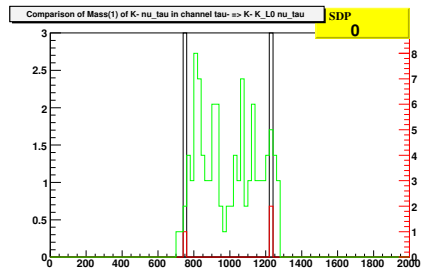
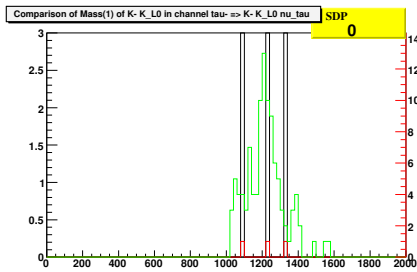
Number of events from generator 2: 57



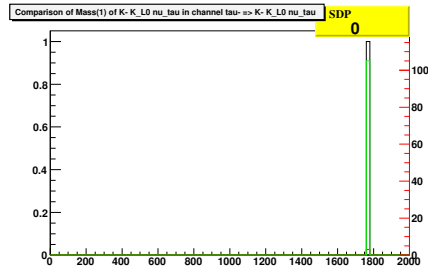
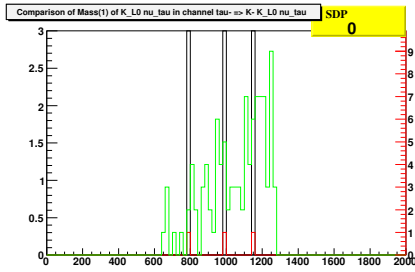


### 31 Decay Channel: $\tau^- \rightarrow K^- K_L^0 \nu_\tau$

Number of events from generator 1: 3  
 Number of events from generator 2: 105

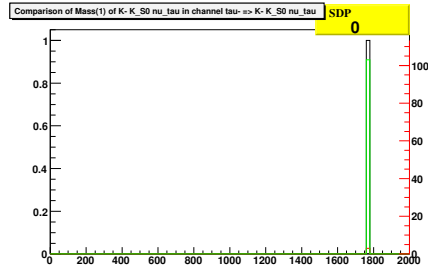
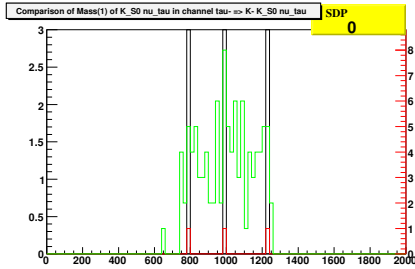
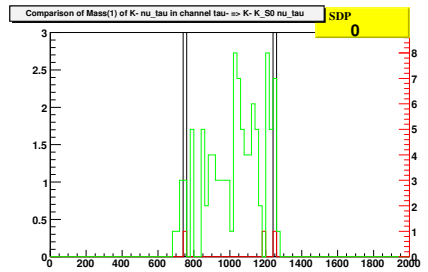
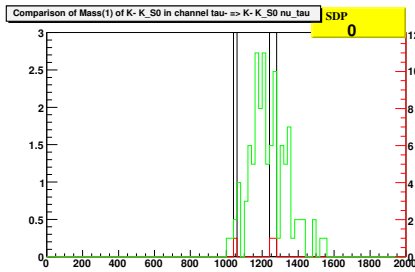






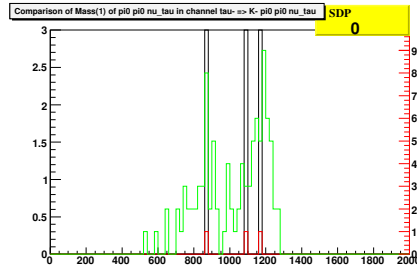
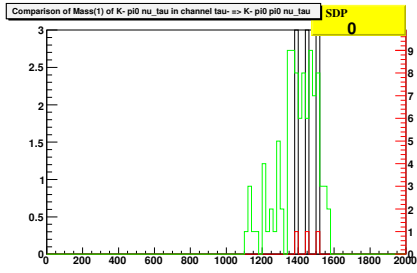
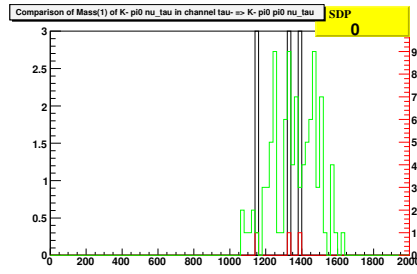
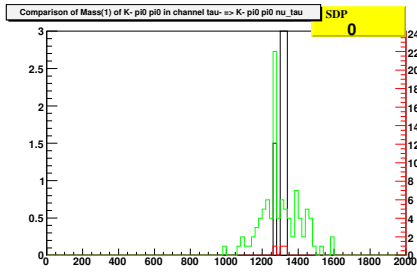
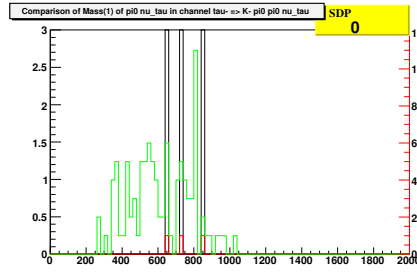
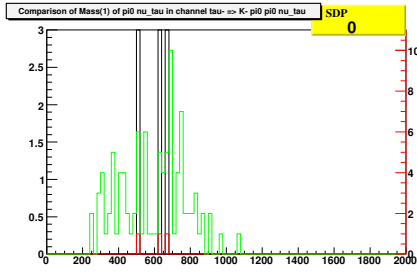
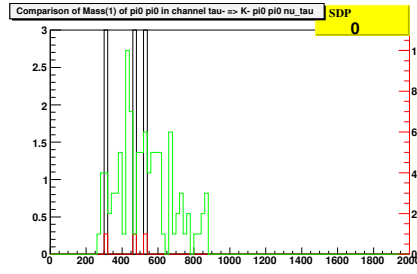
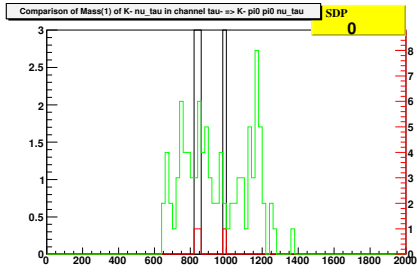
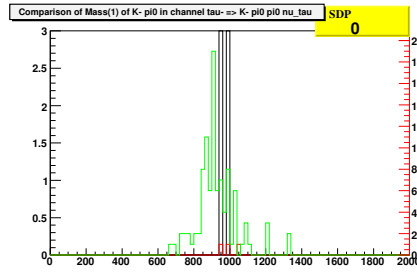
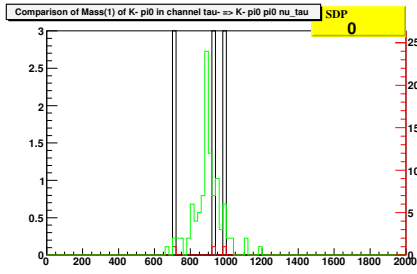
### 32 Decay Channel: $\tau^- \rightarrow K^- K_S^0 \nu_\tau$

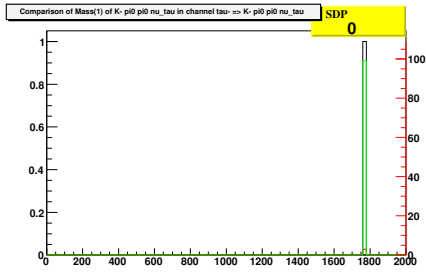
Number of events from generator 1: 3  
 Number of events from generator 2: 103



### 33 Decay Channel: $\tau^- \rightarrow K^- \pi^0 \pi^0 \nu_\tau$

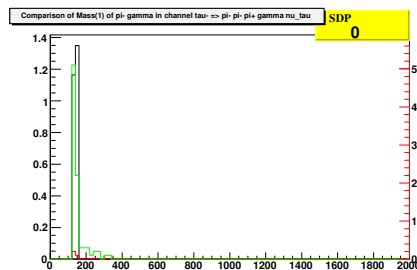
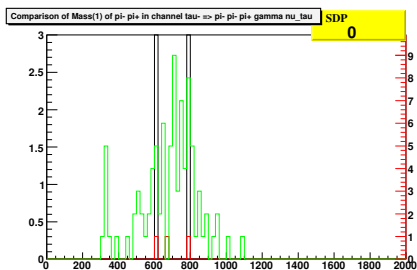
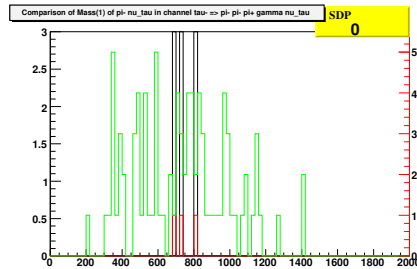
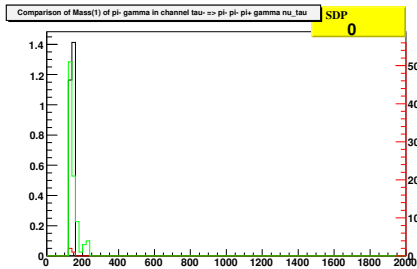
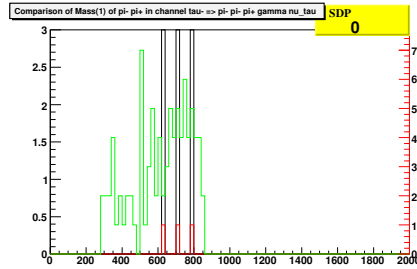
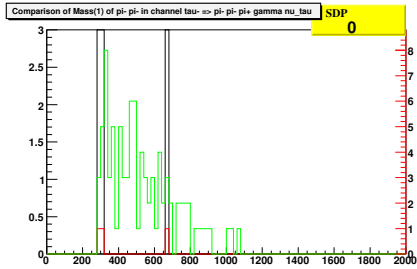
Number of events from generator 1: 3  
 Number of events from generator 2: 99

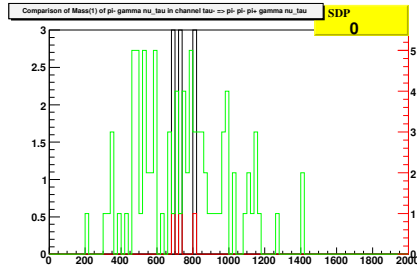
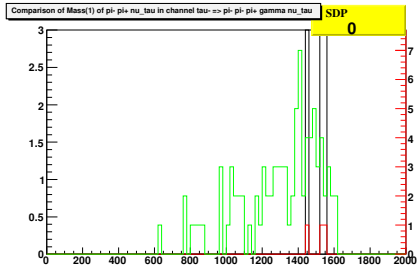
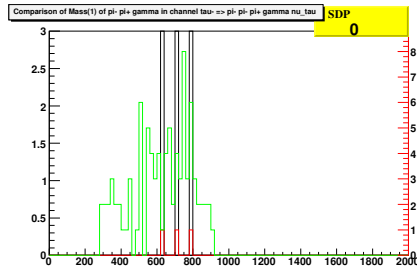
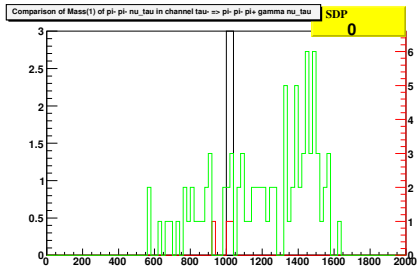
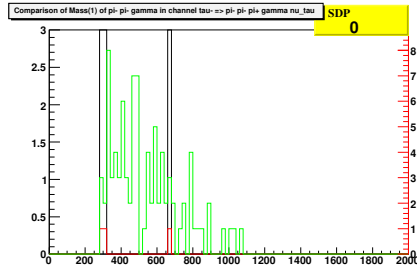
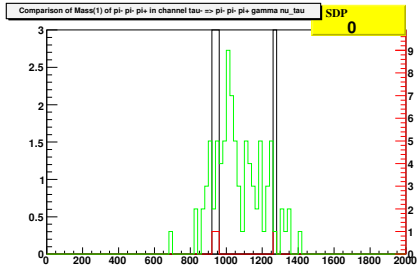
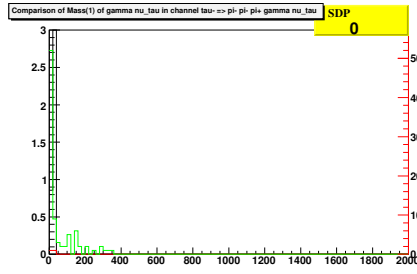
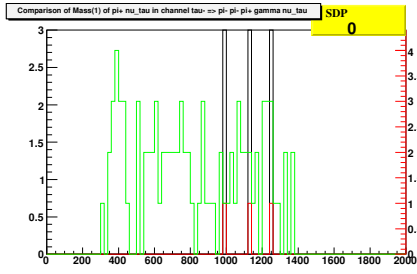
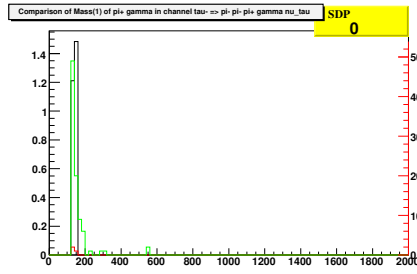
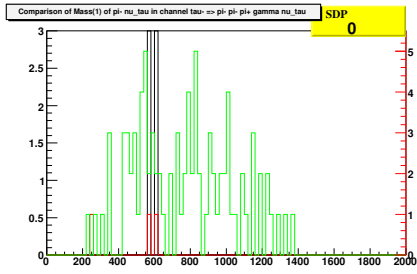


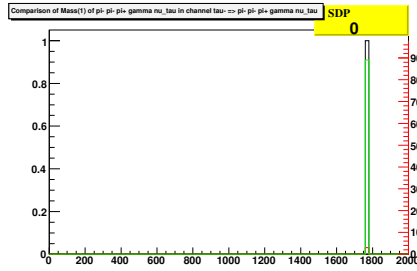
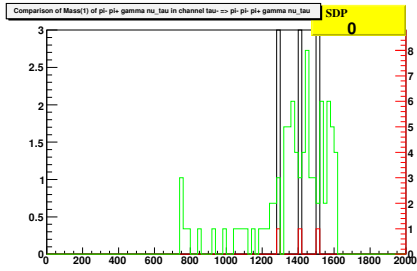
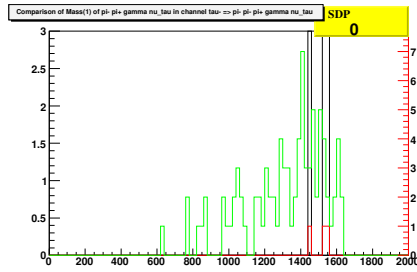
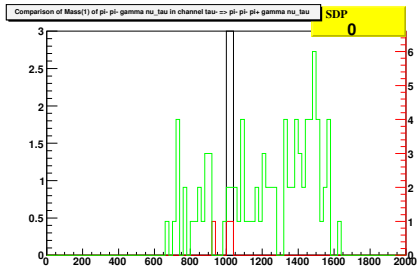
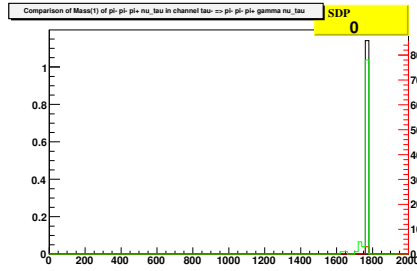
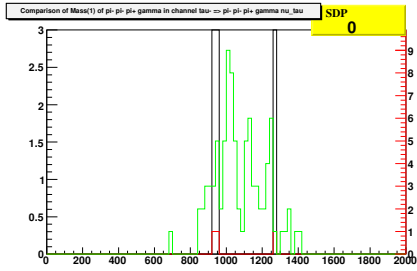
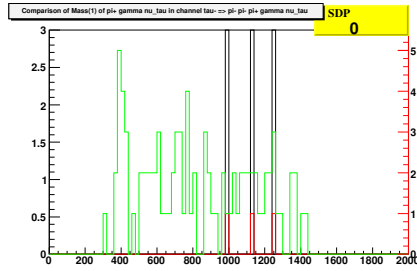
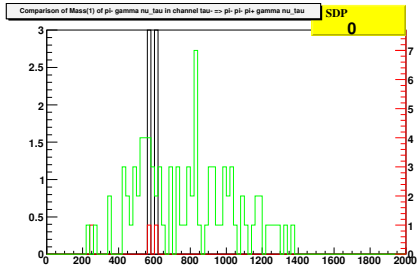
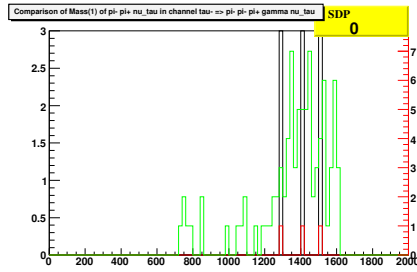
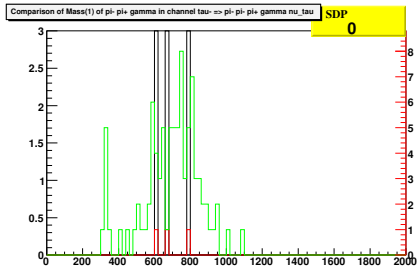


### 34 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^+ \gamma \nu_\tau$

Number of events from generator 1: 3  
 Number of events from generator 2: 89



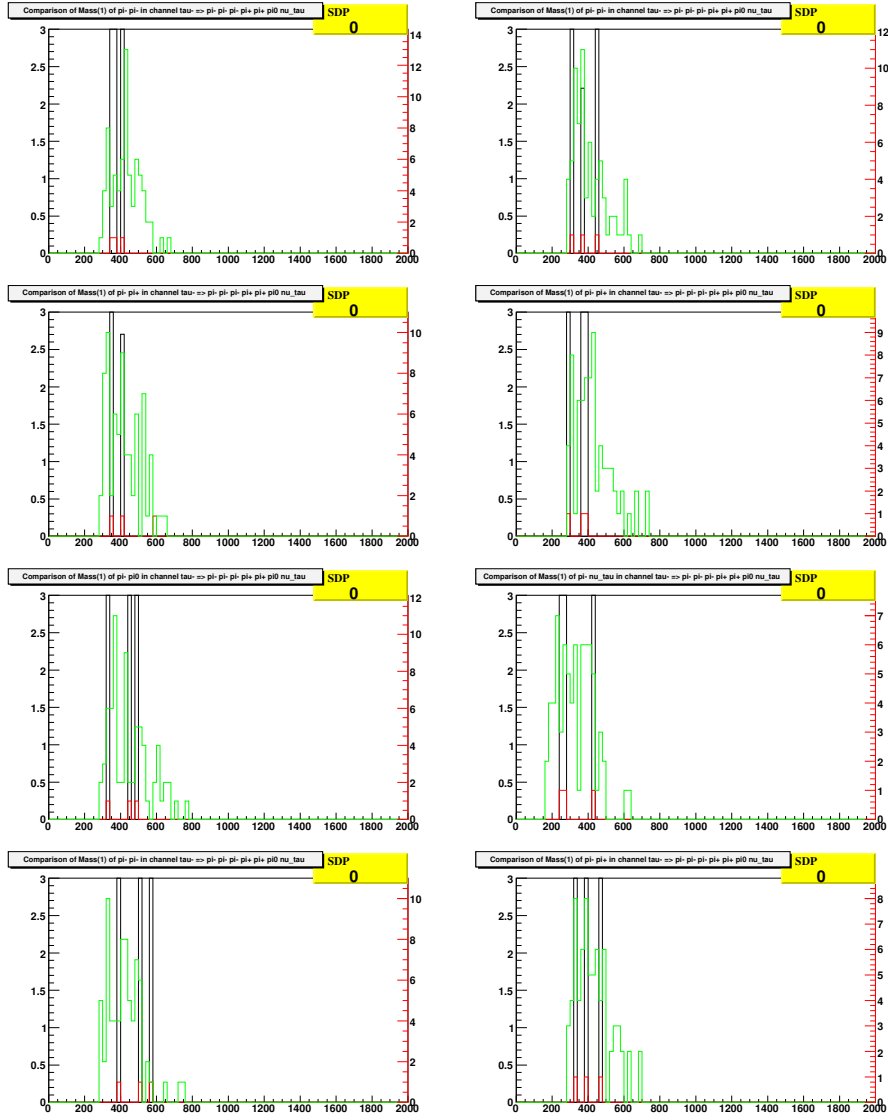


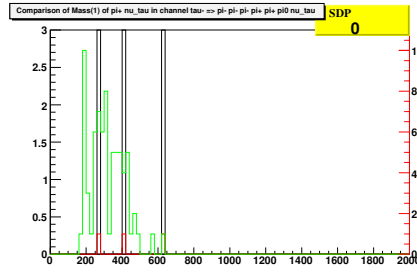
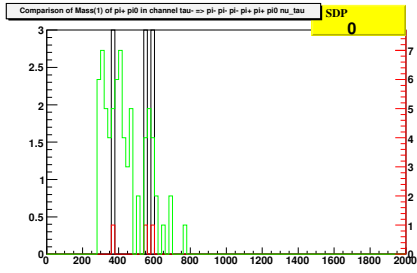
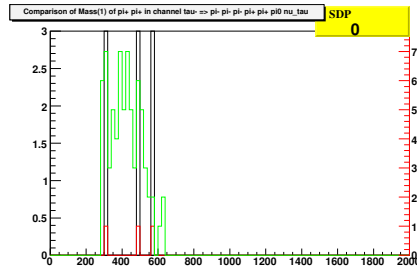
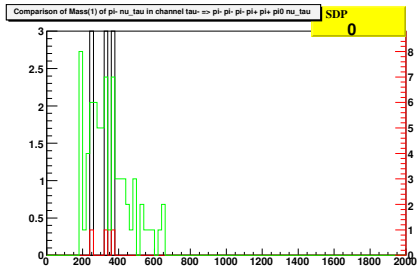
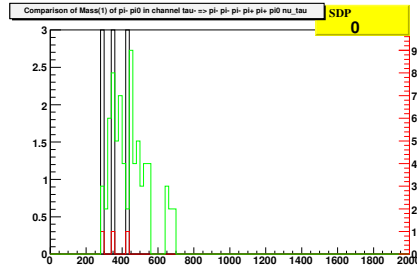
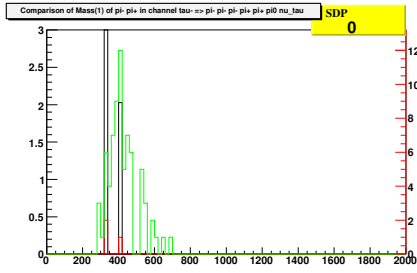
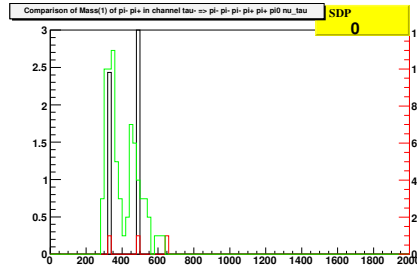
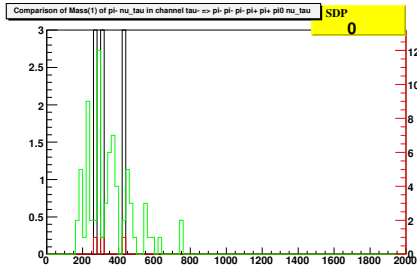
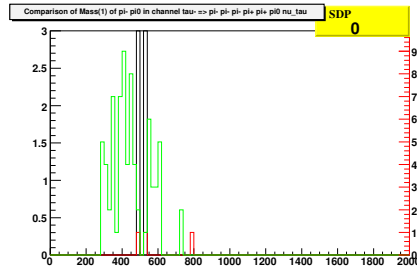
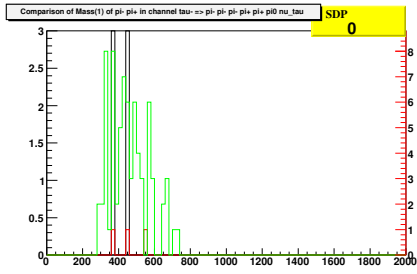


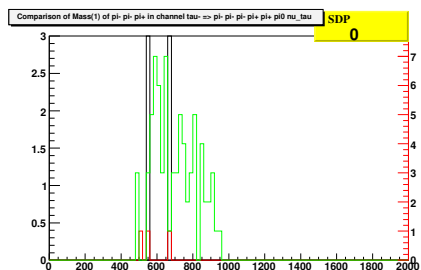
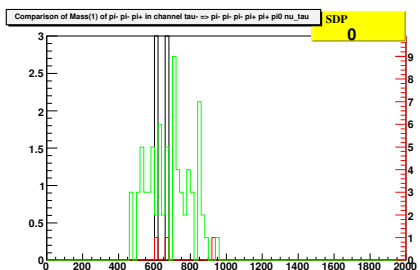
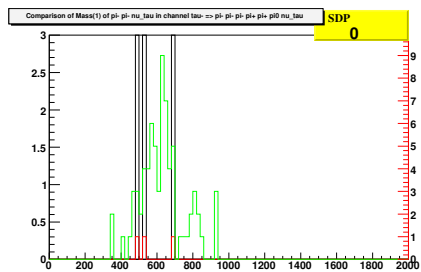
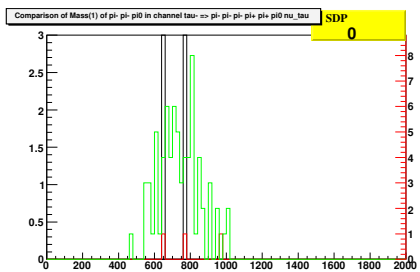
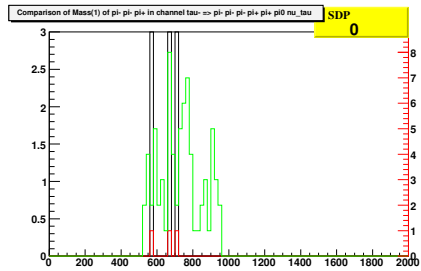
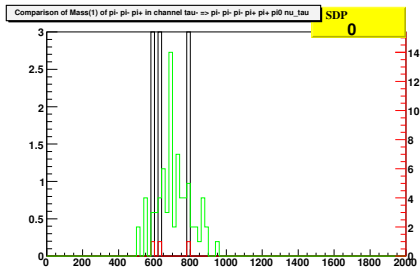
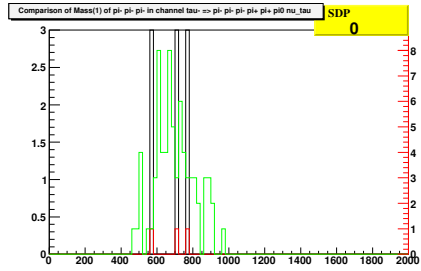
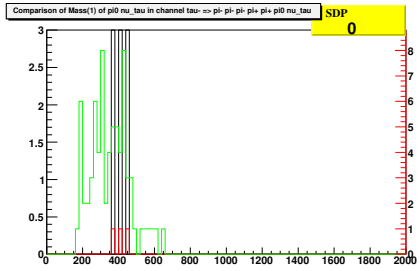
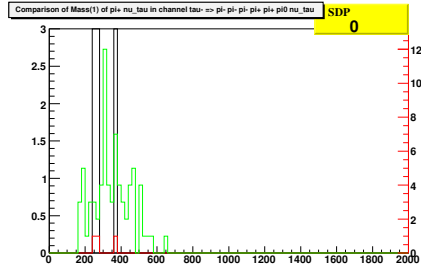
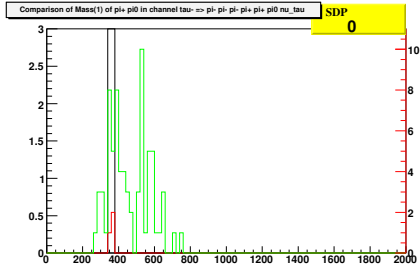
### 35 Decay Channel: $\tau^- \rightarrow \pi^- \pi^- \pi^- \pi^+ \pi^+ \pi^0 \nu_\tau$

Number of events from generator 1: 3

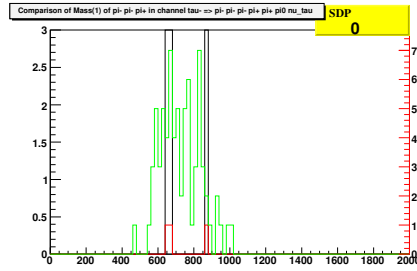
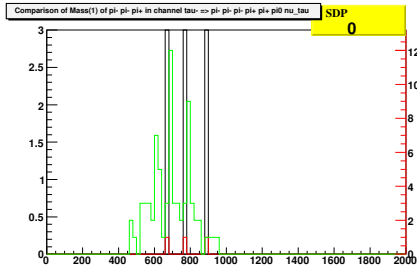
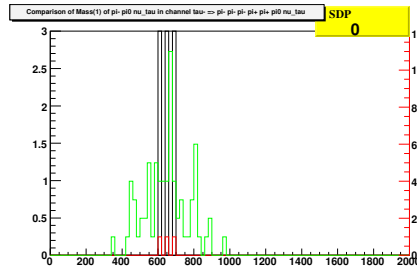
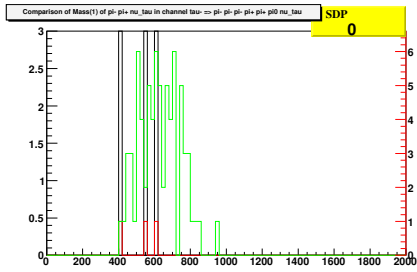
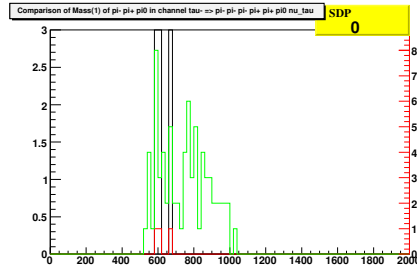
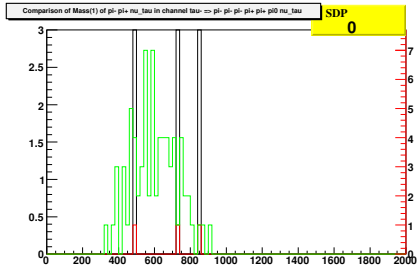
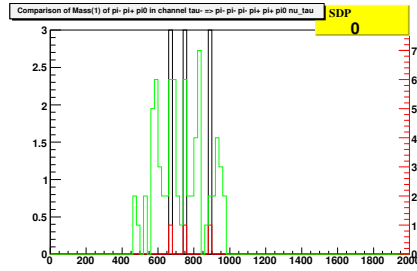
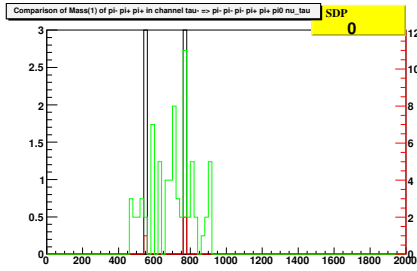
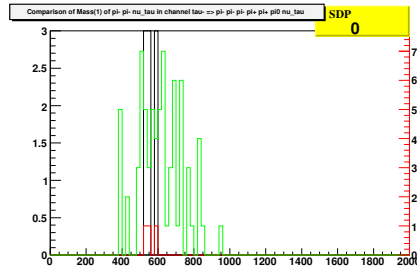
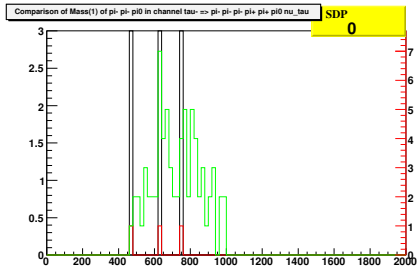
Number of events from generator 2: 73

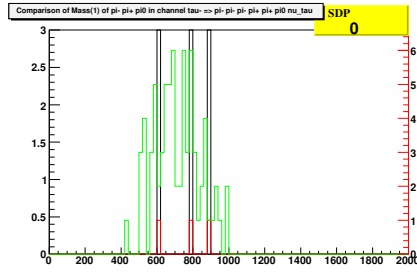
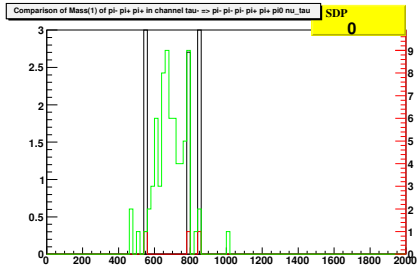
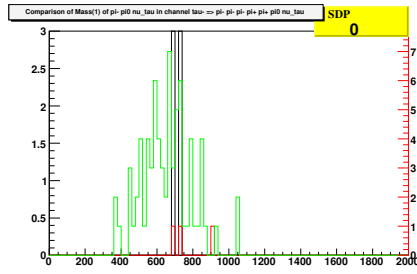
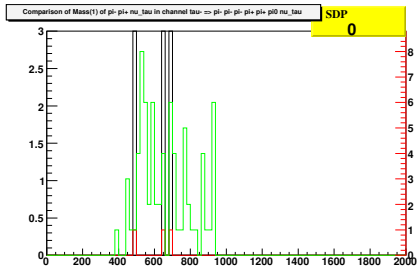
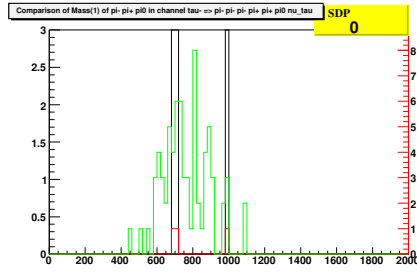
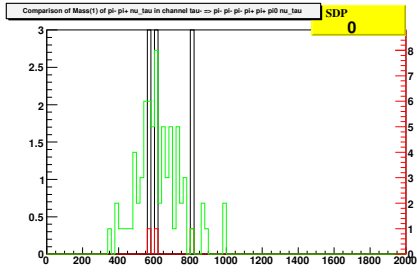
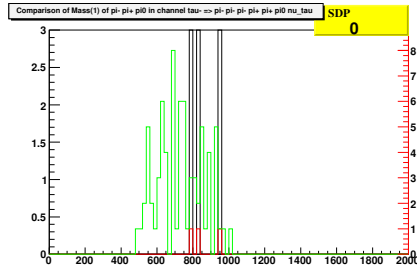
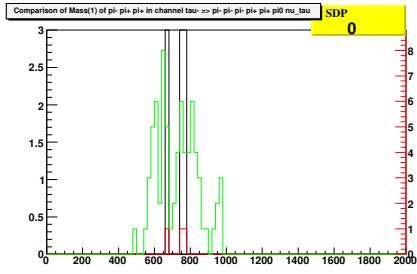
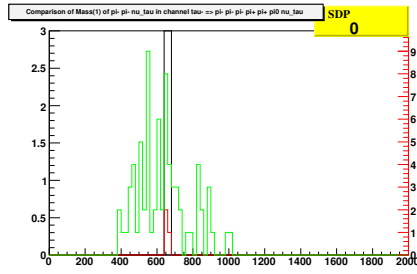
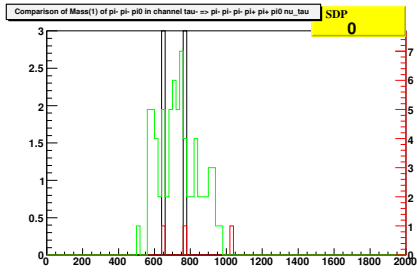


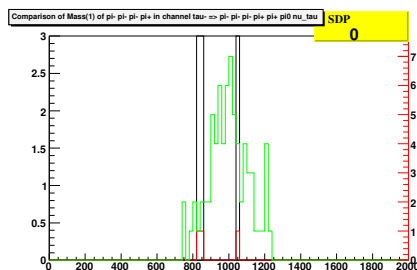
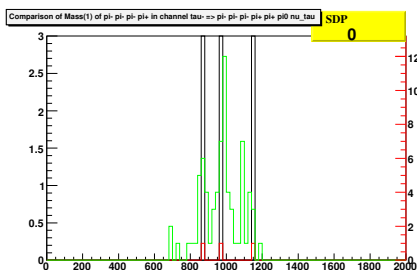
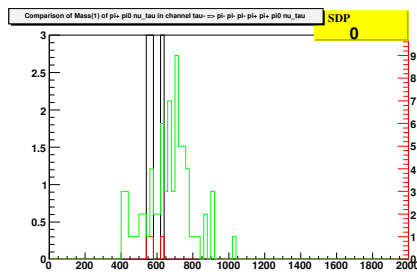
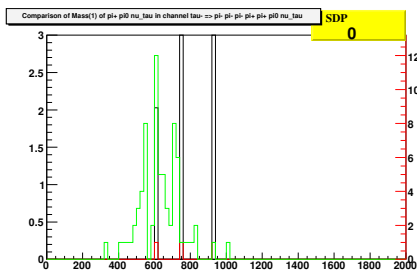
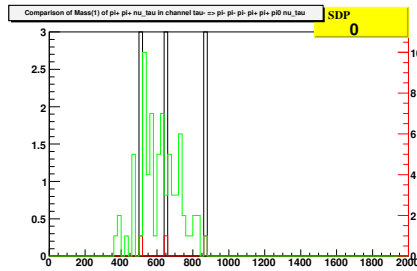
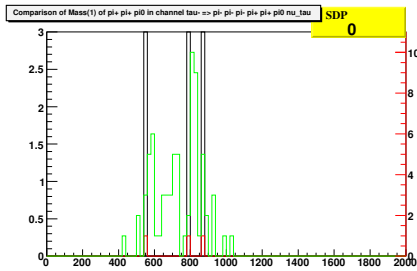
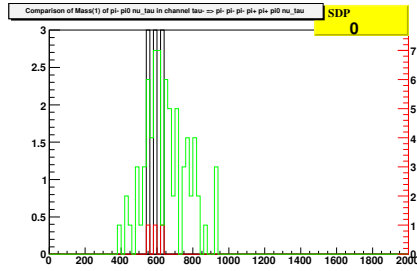
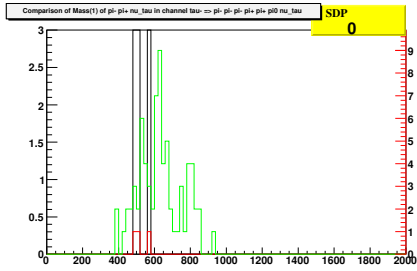
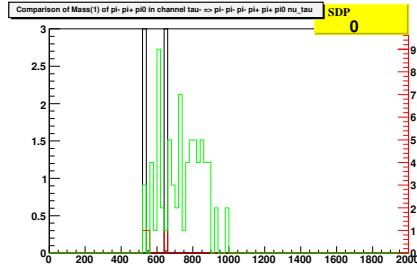
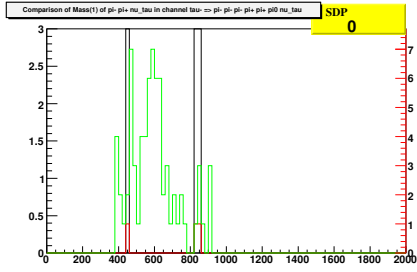


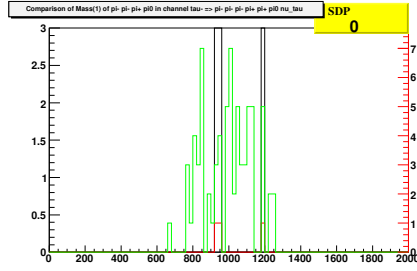
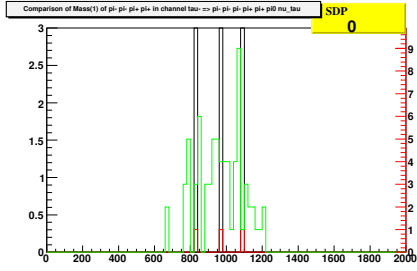
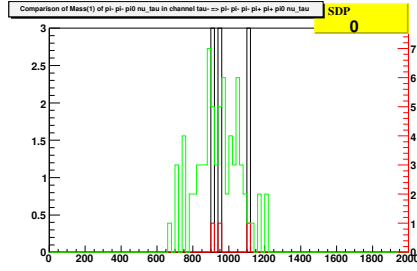
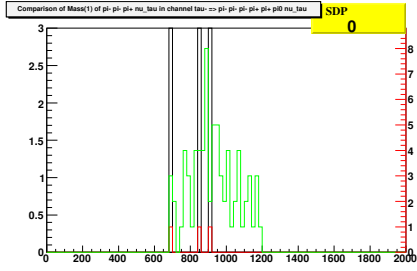
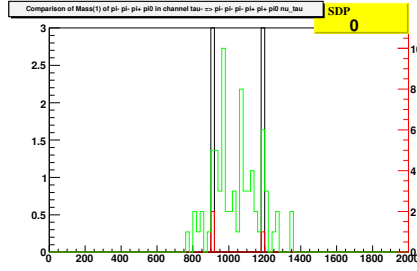
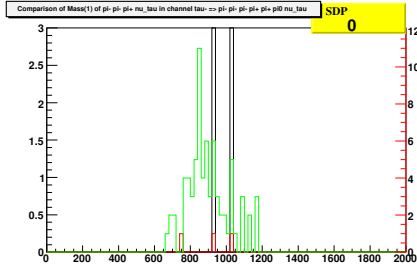
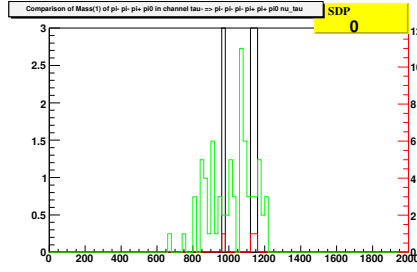
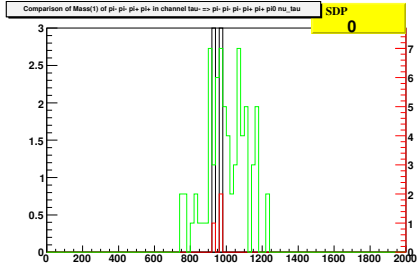
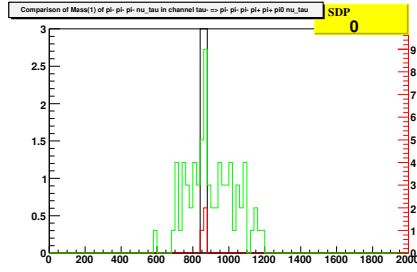
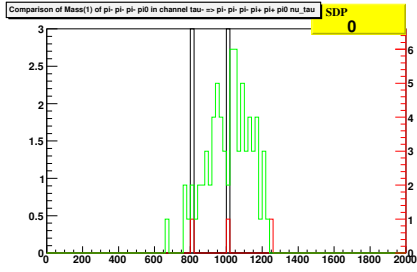


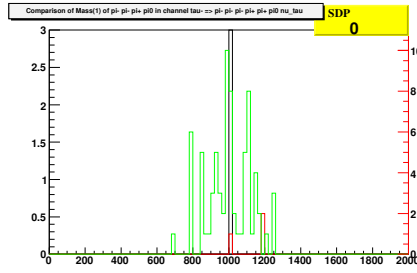
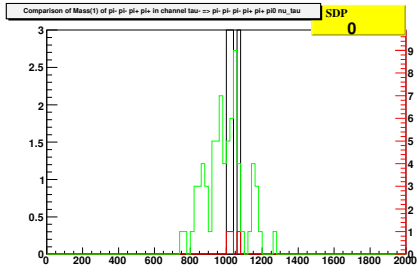
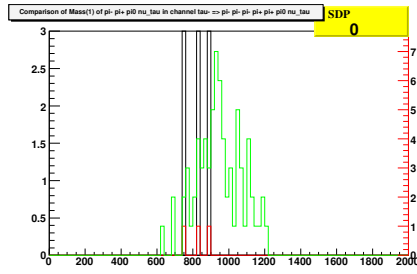
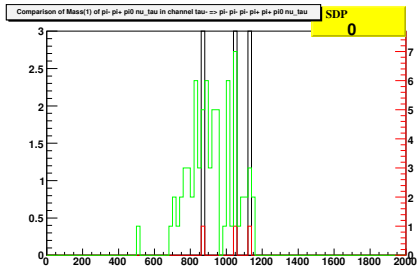
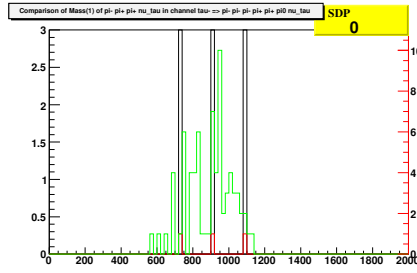
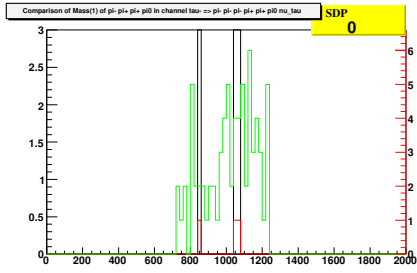
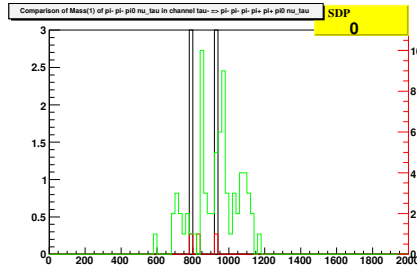
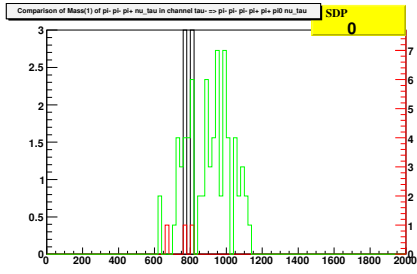
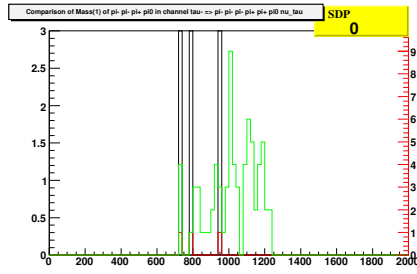
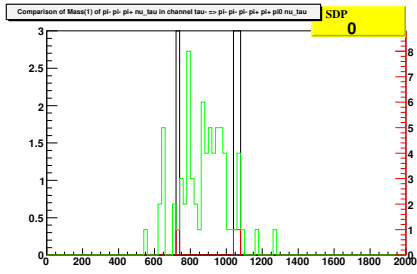






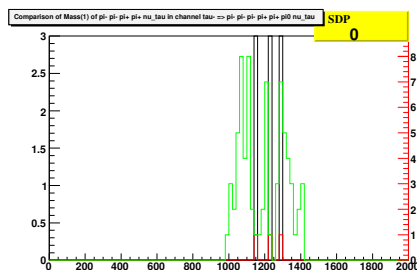
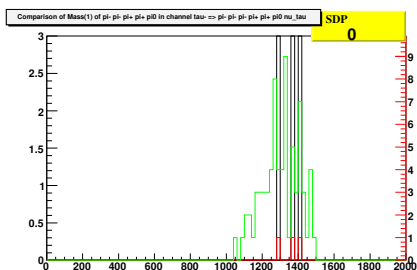
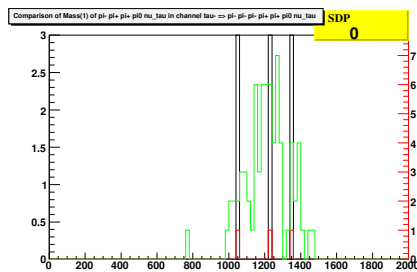
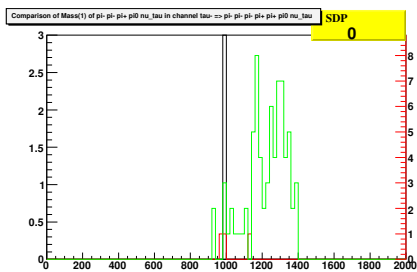
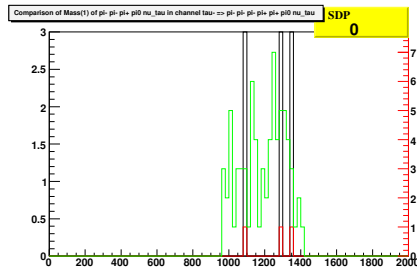
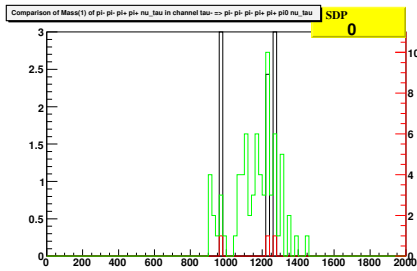
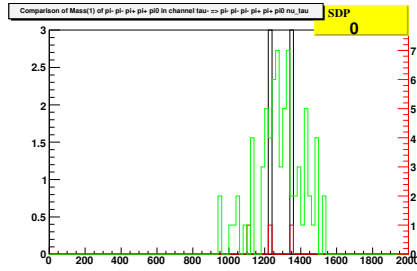
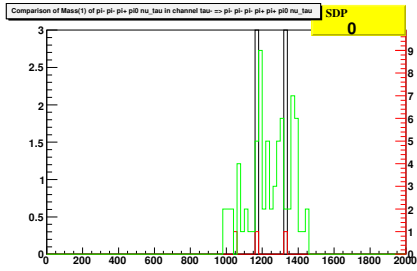
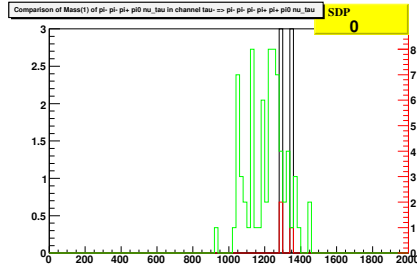
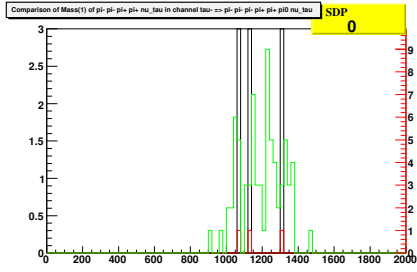




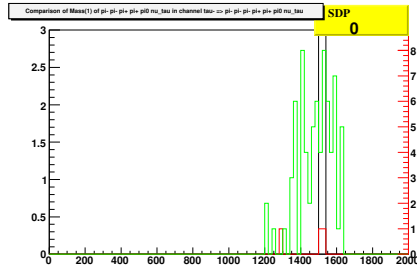
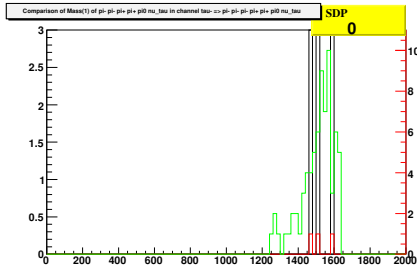
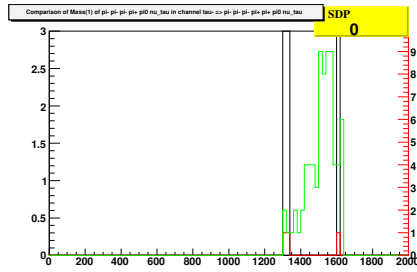
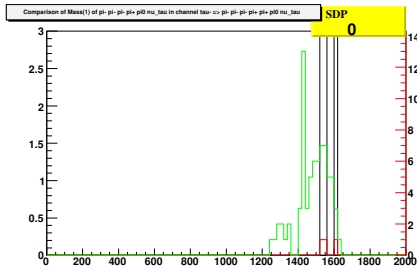
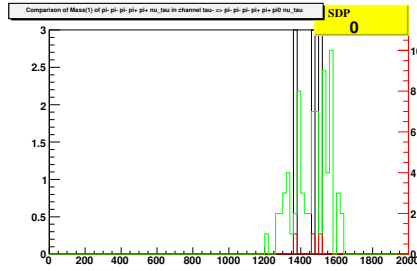
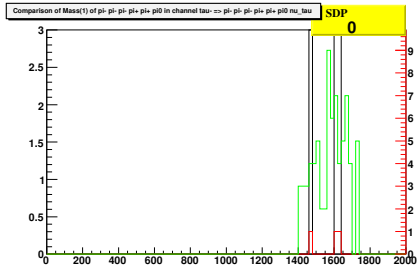
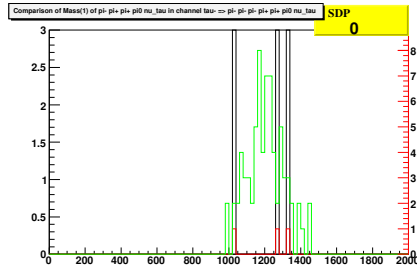
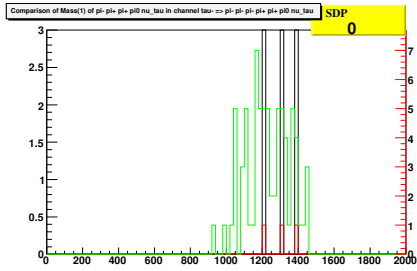
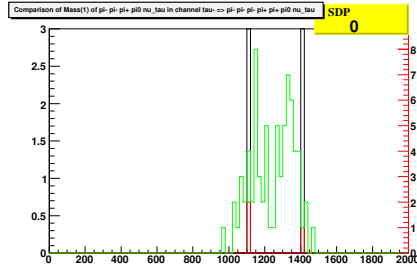
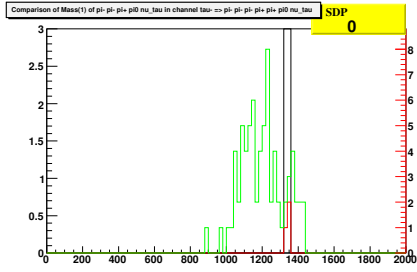


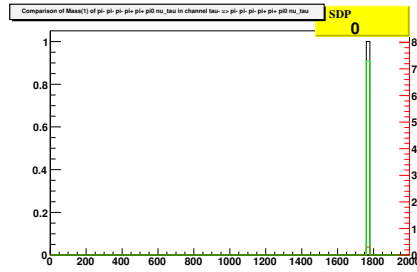
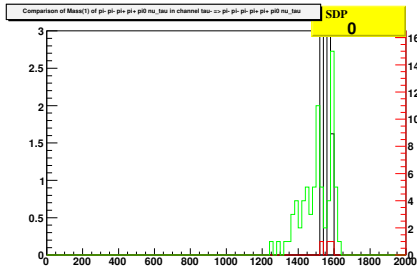






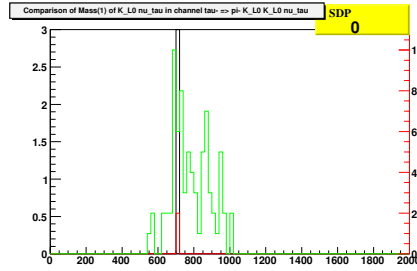
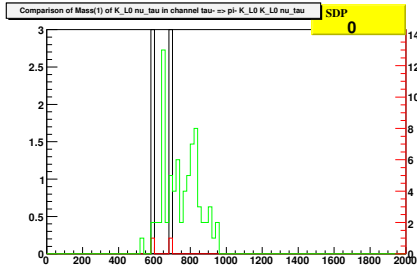
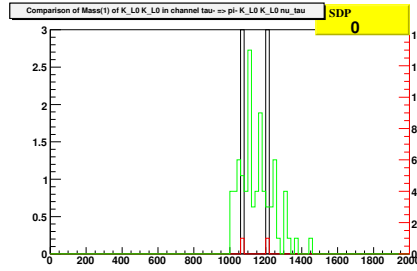
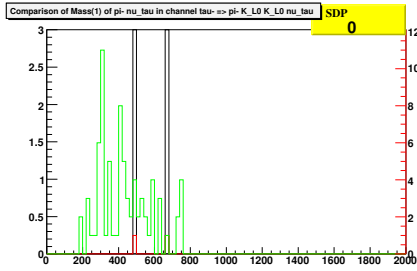
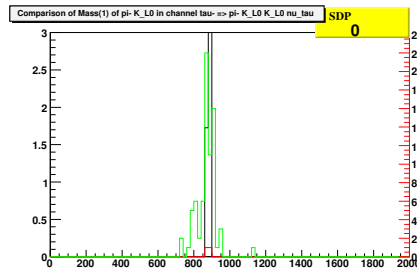
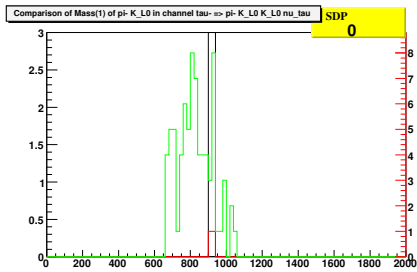


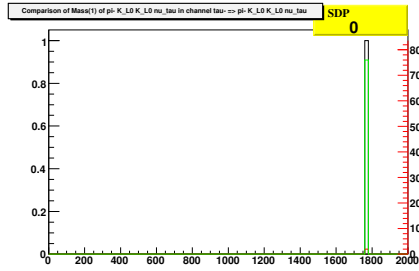
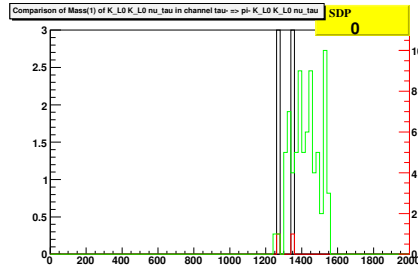
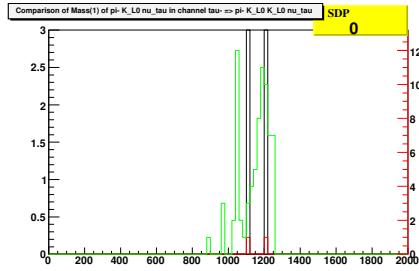
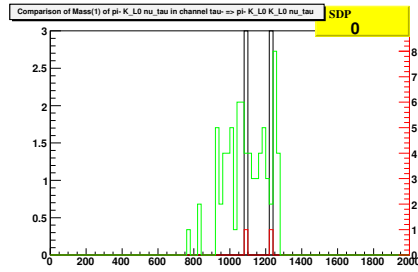
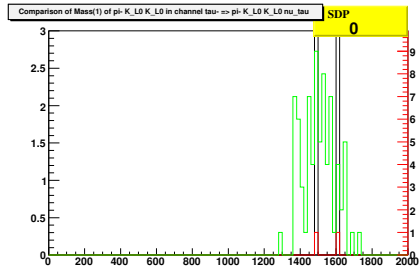




### 36 Decay Channel: $\tau^- \rightarrow \pi^- K_L^0 K_L^0 \nu_\tau$

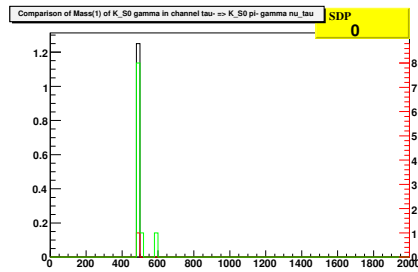
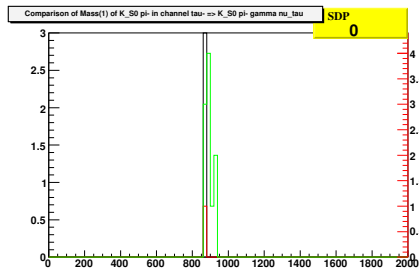
Number of events from generator 1: 2  
 Number of events from generator 2: 76

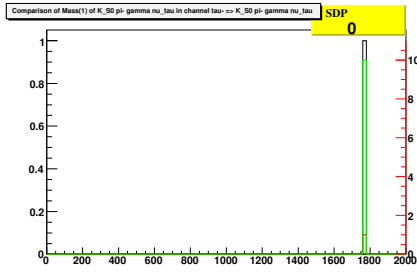
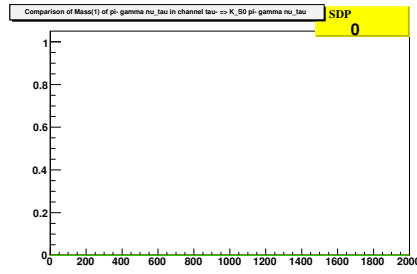
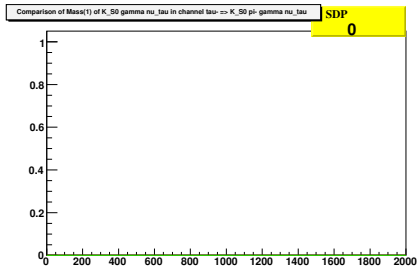
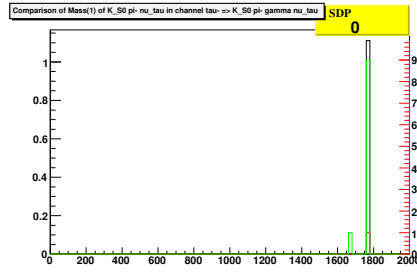
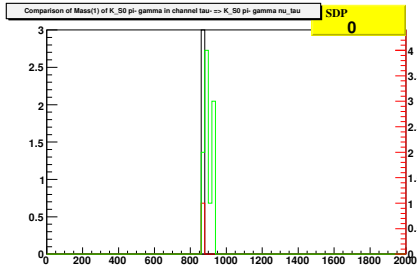
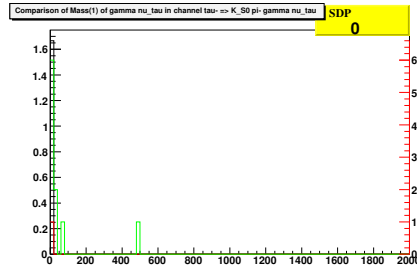
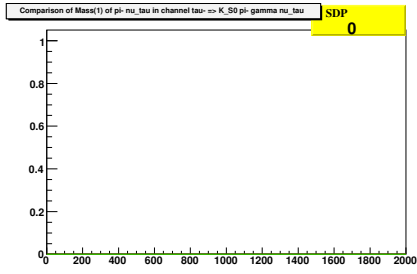
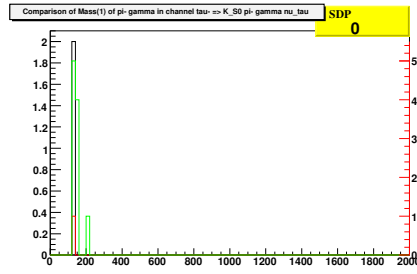
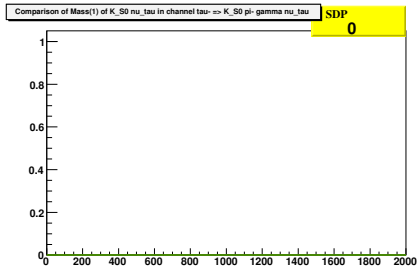




### 37 Decay Channel: $\tau^- \rightarrow K_S^0 \pi^- \gamma \nu_\tau$

Number of events from generator 1: 1  
 Number of events from generator 2: 10

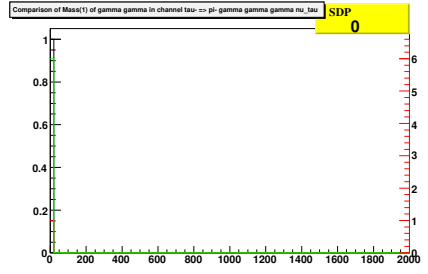
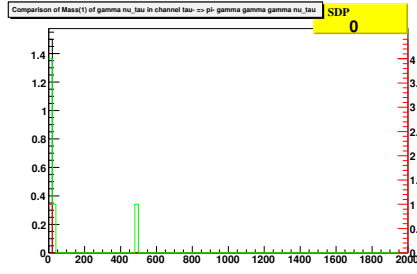
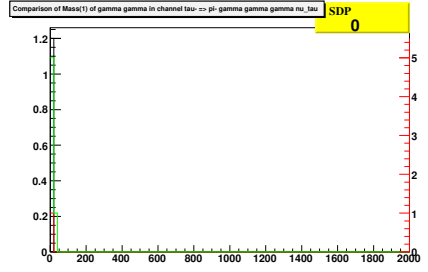
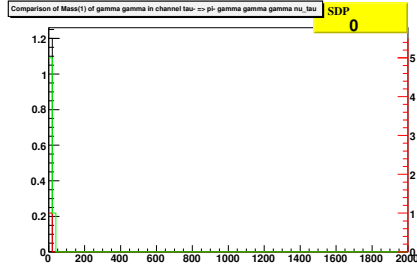
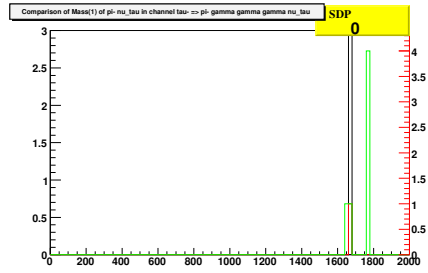
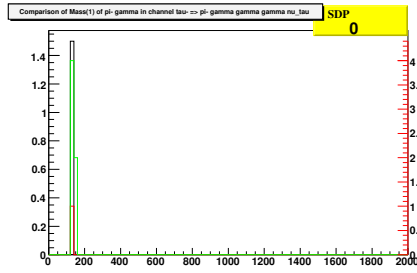
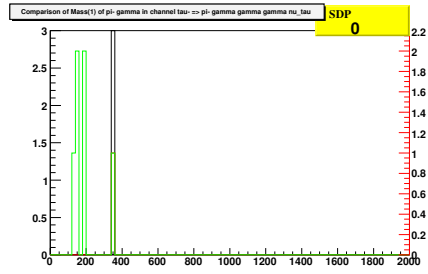
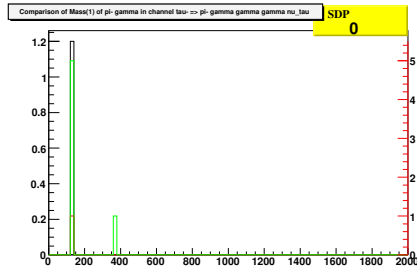


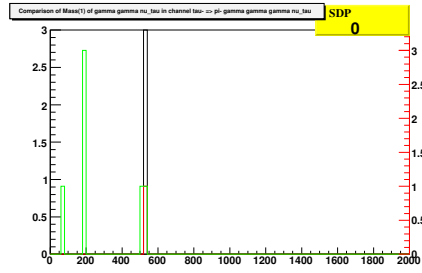
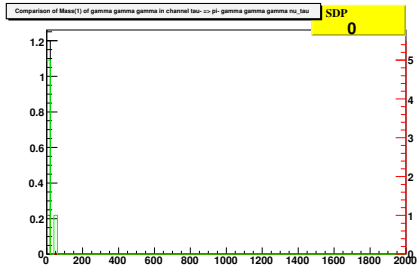
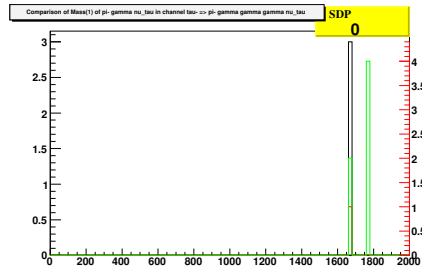
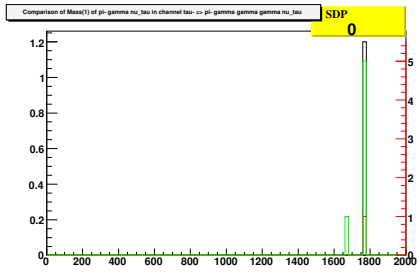
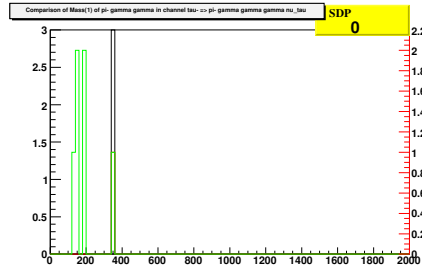
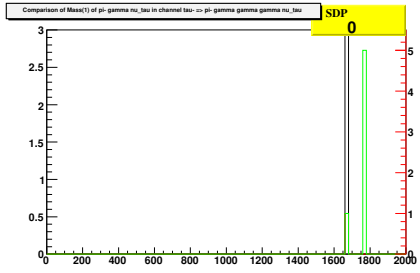
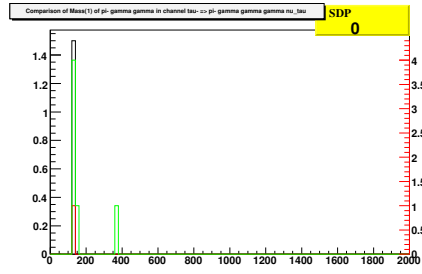
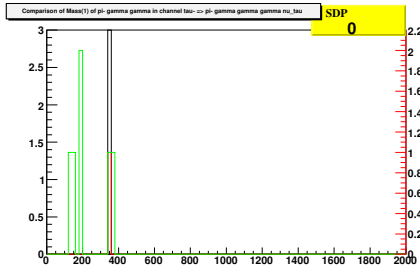
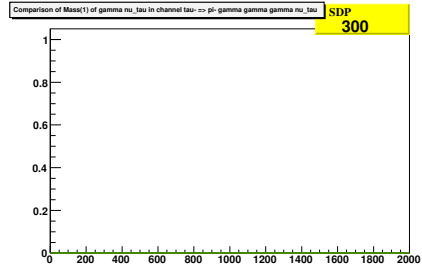
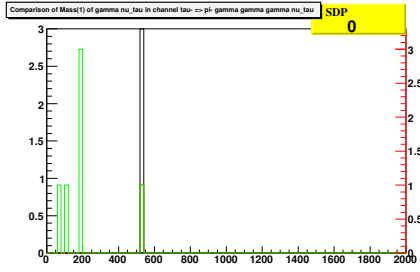


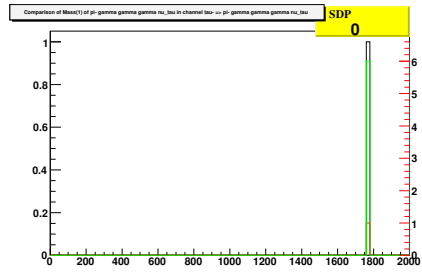
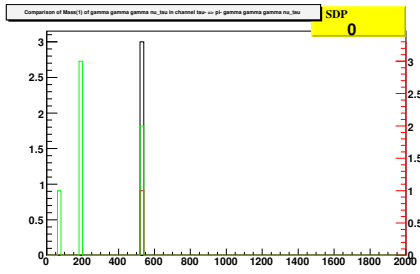
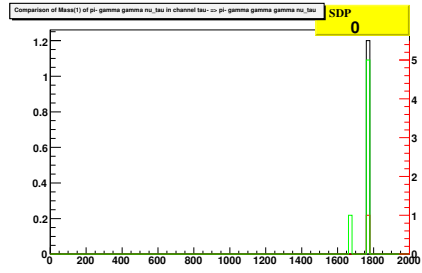
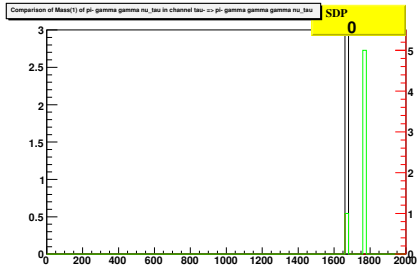
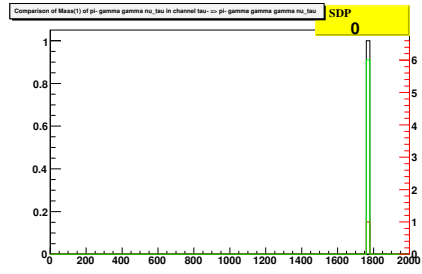
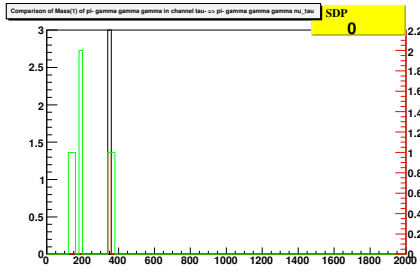
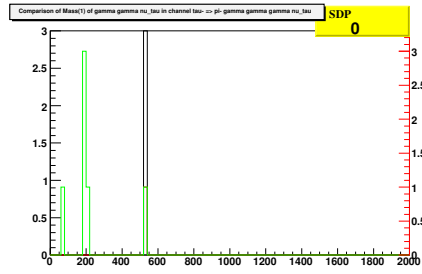
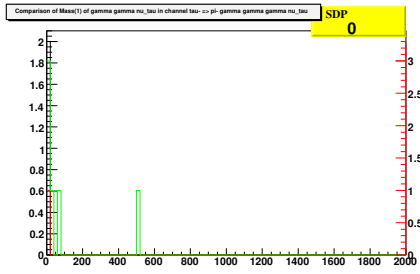
### 38 Decay Channel: $\tau^- \rightarrow \pi^- \gamma \gamma \nu_\tau$

Number of events from generator 1: 1

Number of events from generator 2: 6



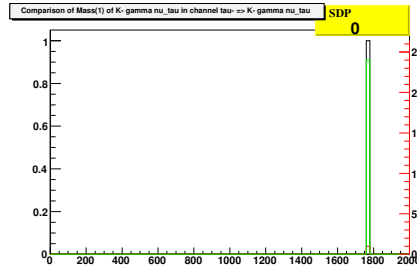
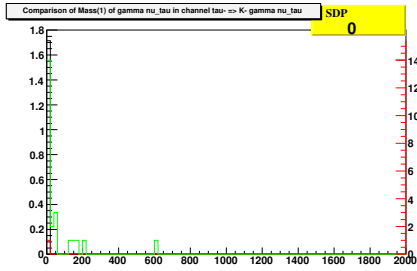
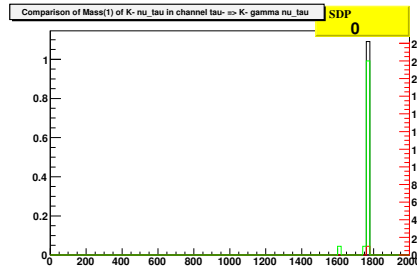
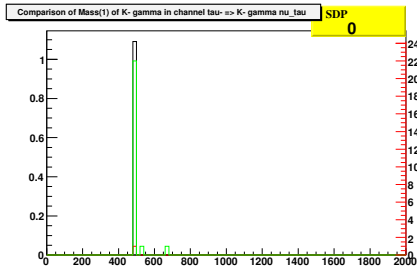




### 39 Decay Channel: $\tau^- \rightarrow K^- \gamma \nu_\tau$

Number of events from generator 1: 1

Number of events from generator 2: 24



#### 40 Decay Channel: $\tau^- \rightarrow \gamma \nu_\tau \tilde{\nu}_e e^-$

Number of events from generator 1: 1  
 Number of events from generator 2: 21

