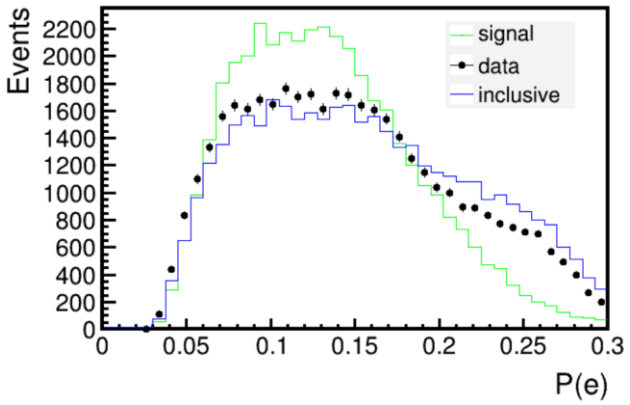
信号，数据，inclusive mc对比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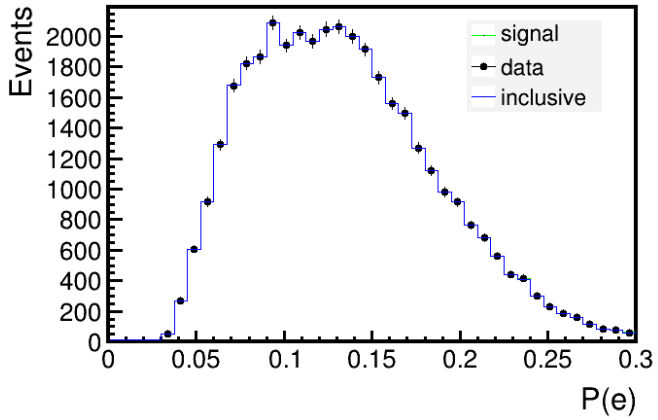
P(e)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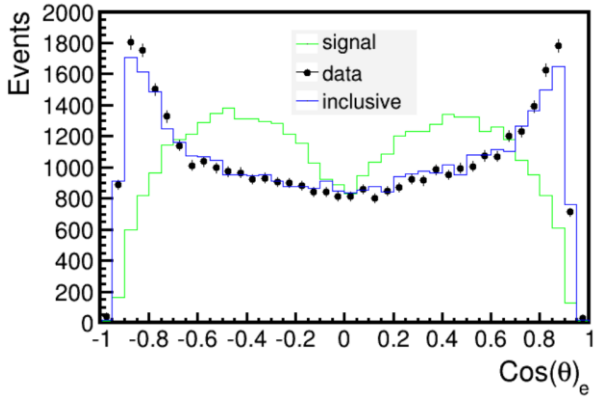
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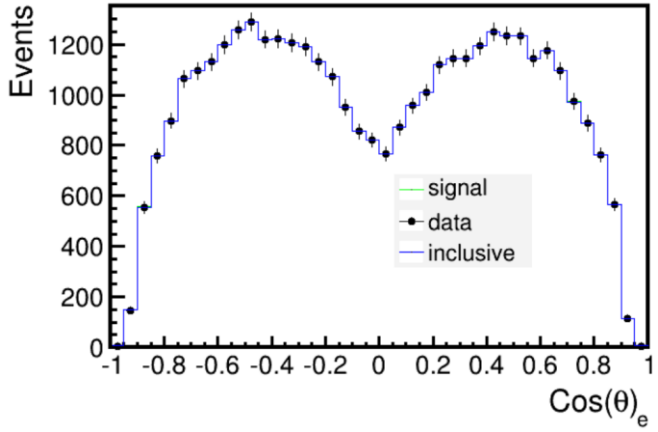
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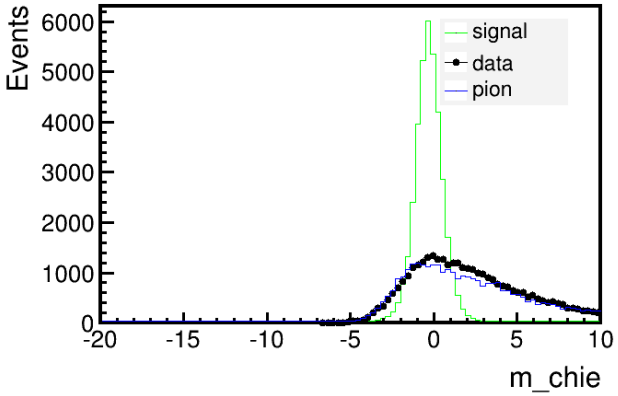
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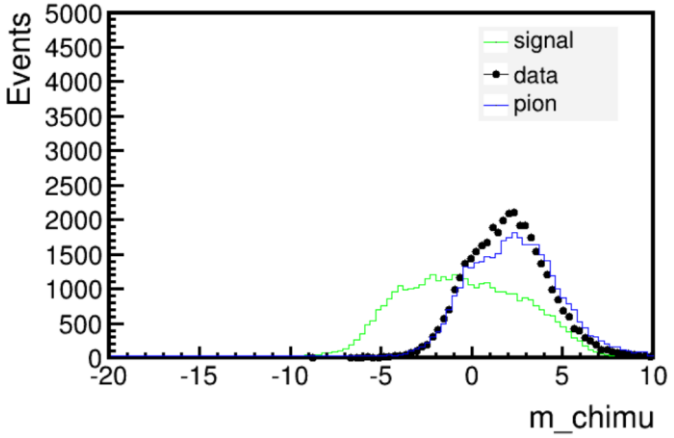
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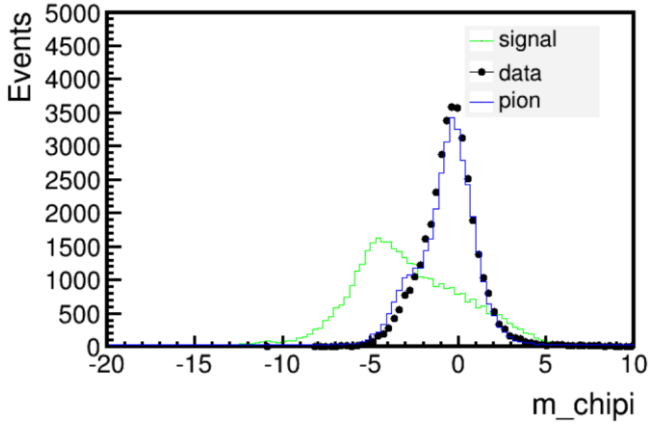
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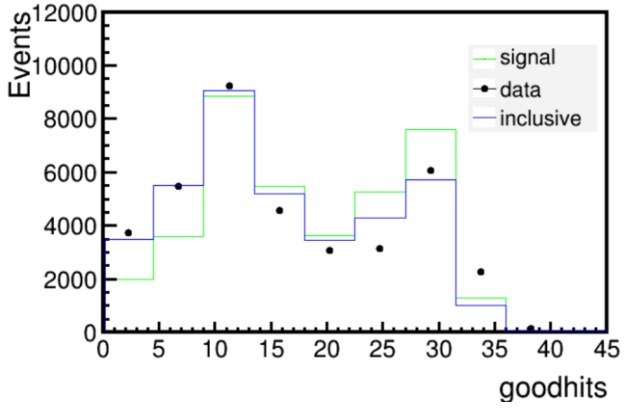
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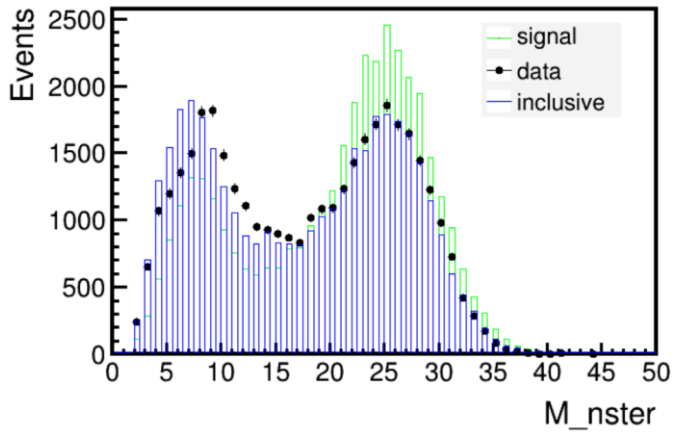
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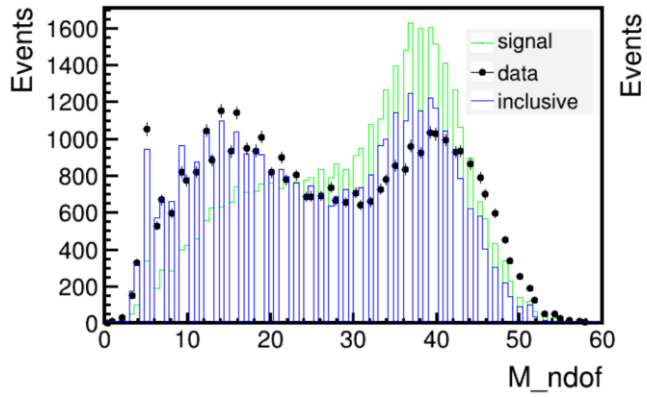
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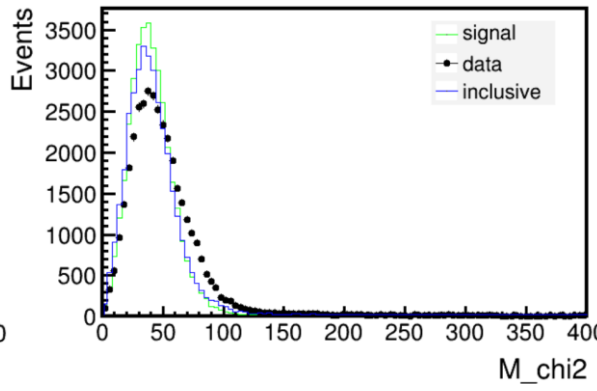
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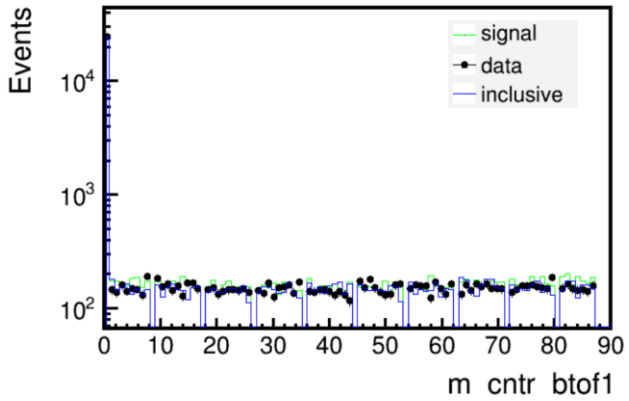
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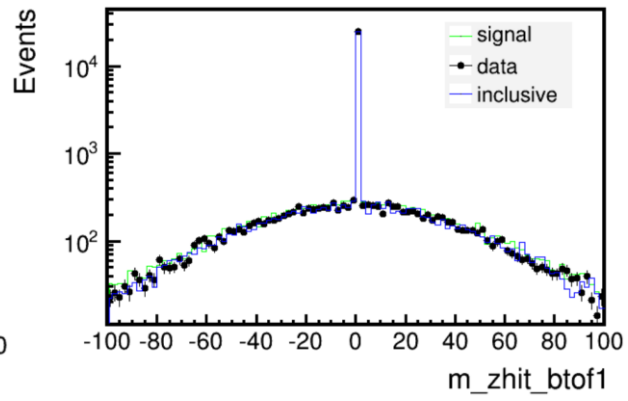
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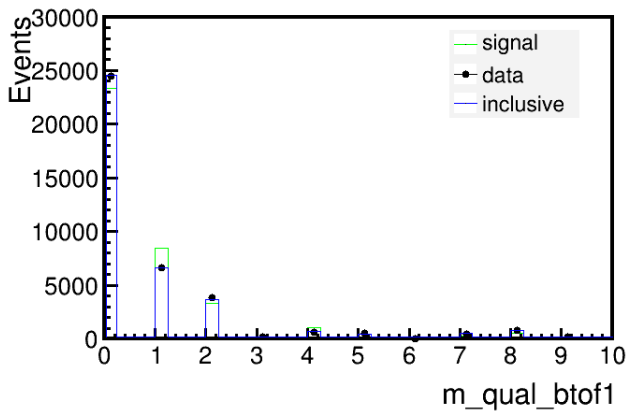
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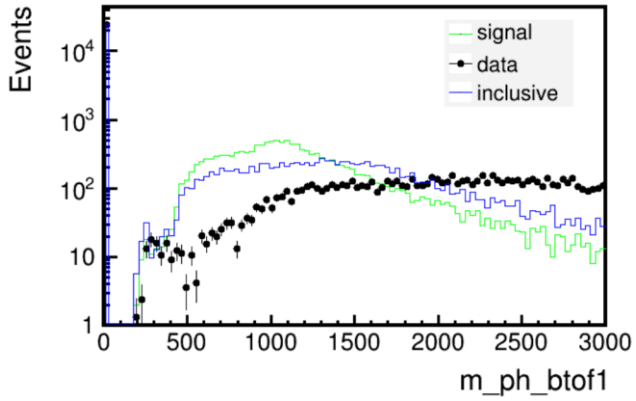
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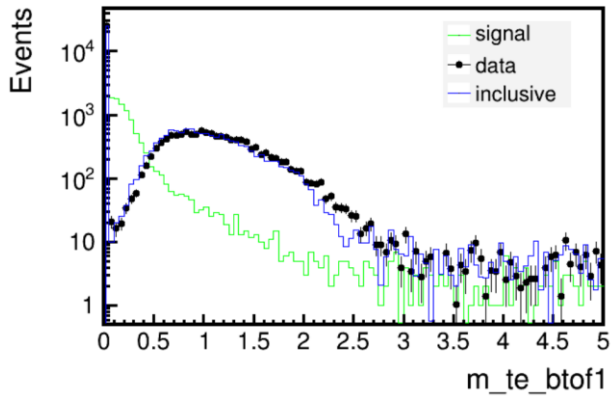
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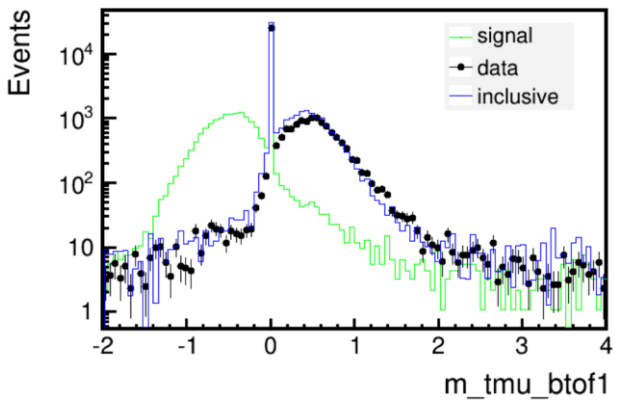
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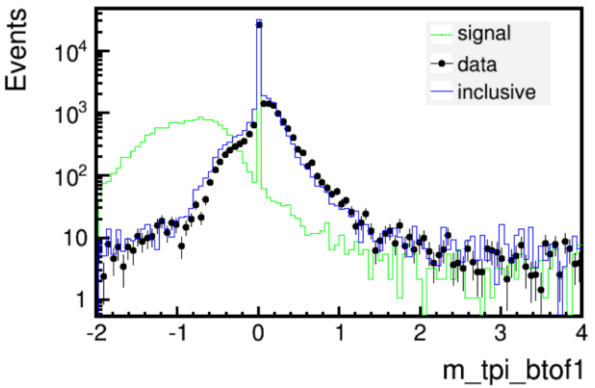
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data
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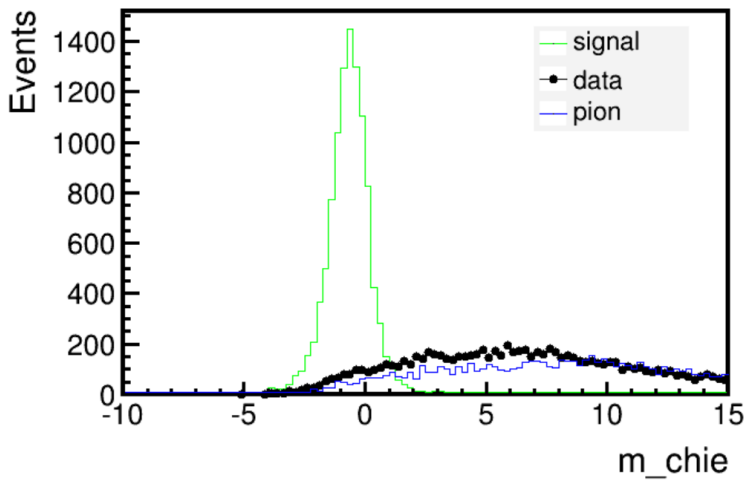
Events
signal
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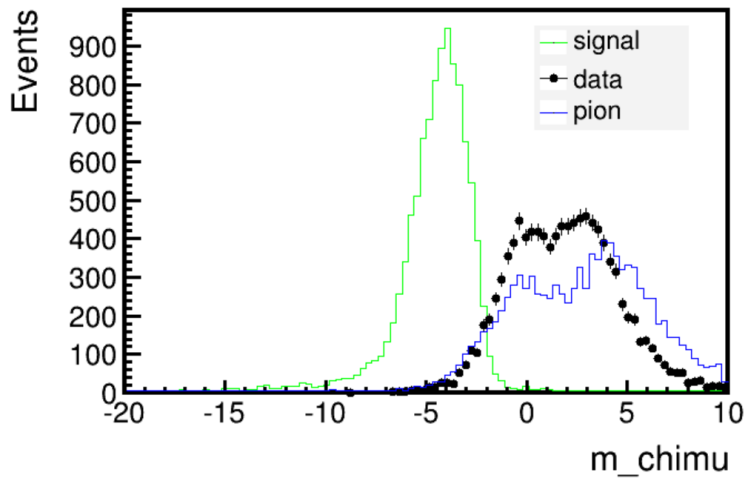
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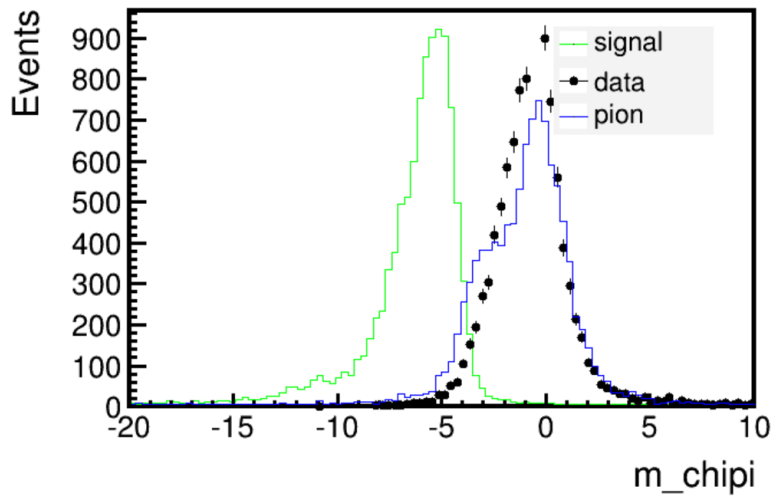
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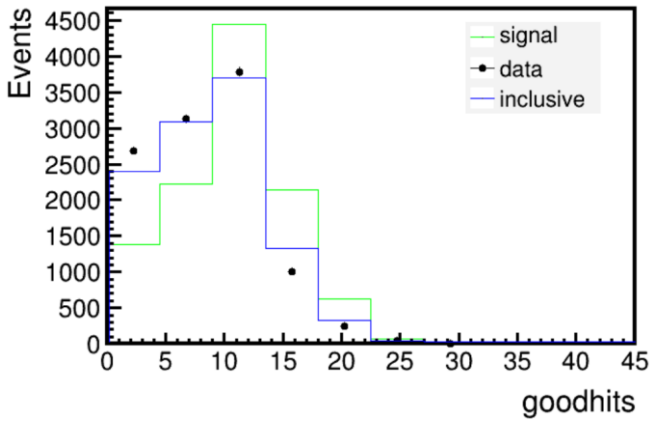
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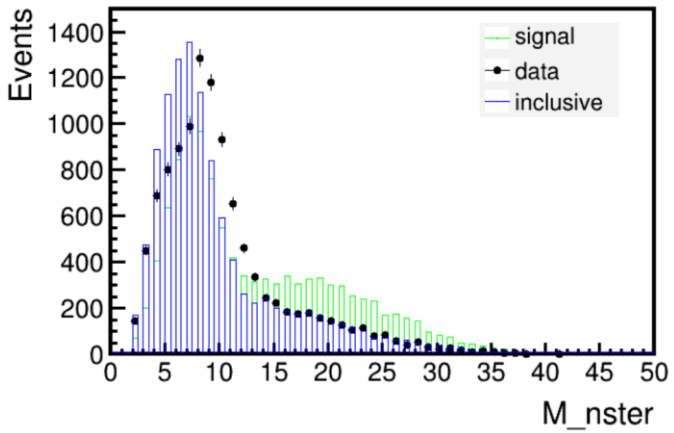
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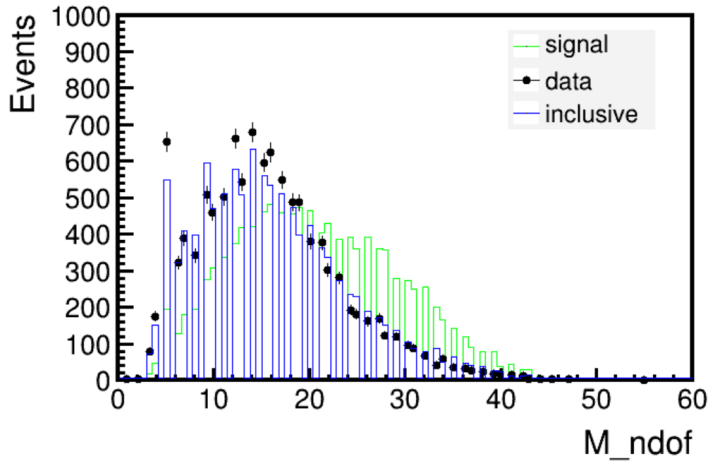
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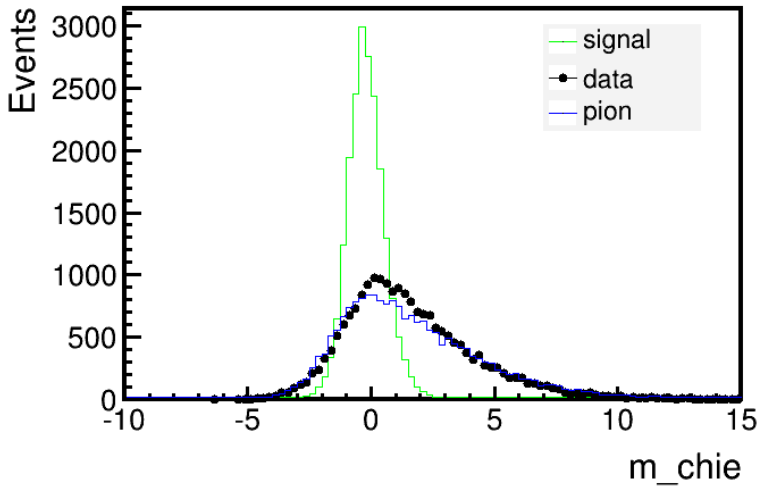
P_e>0.1&&P_e<0.2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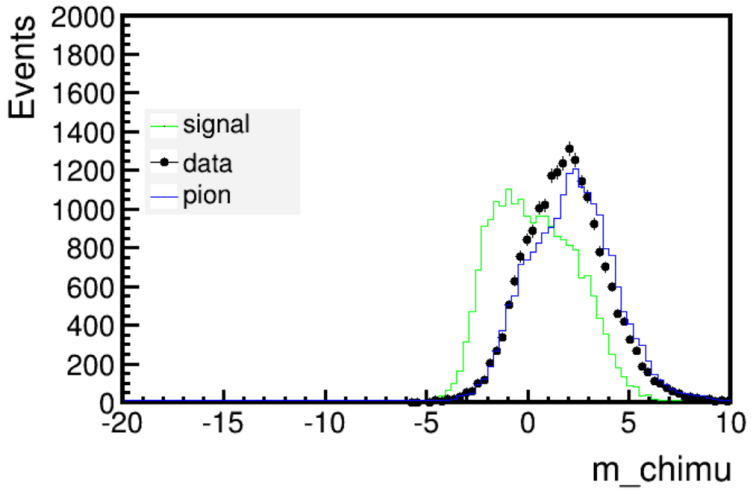
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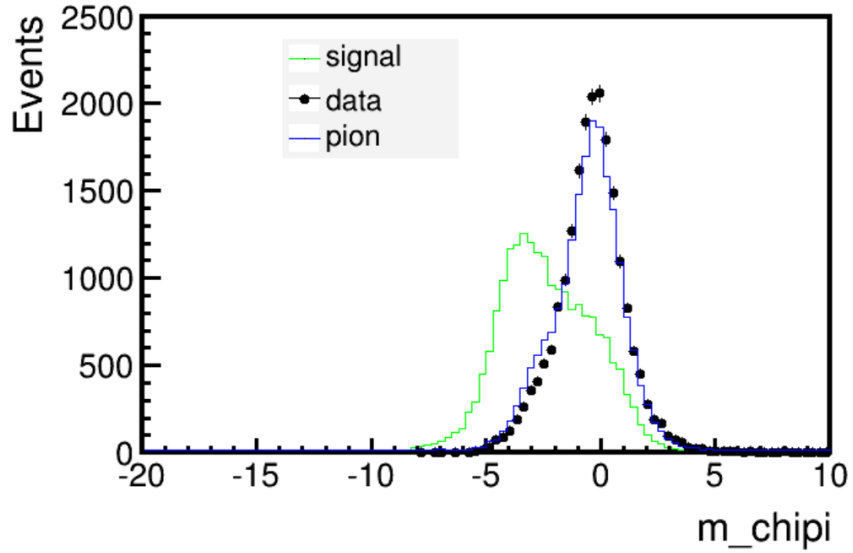
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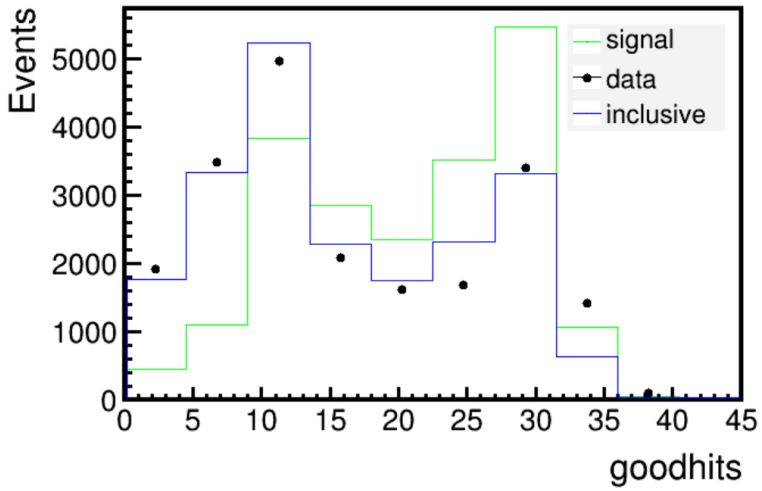
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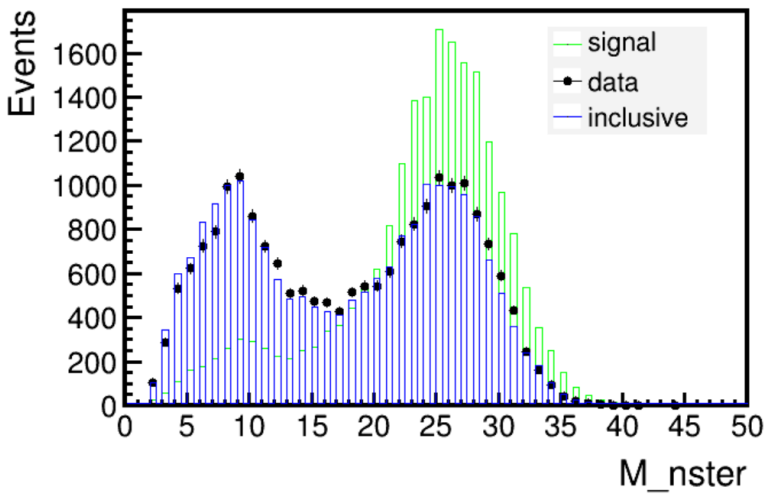
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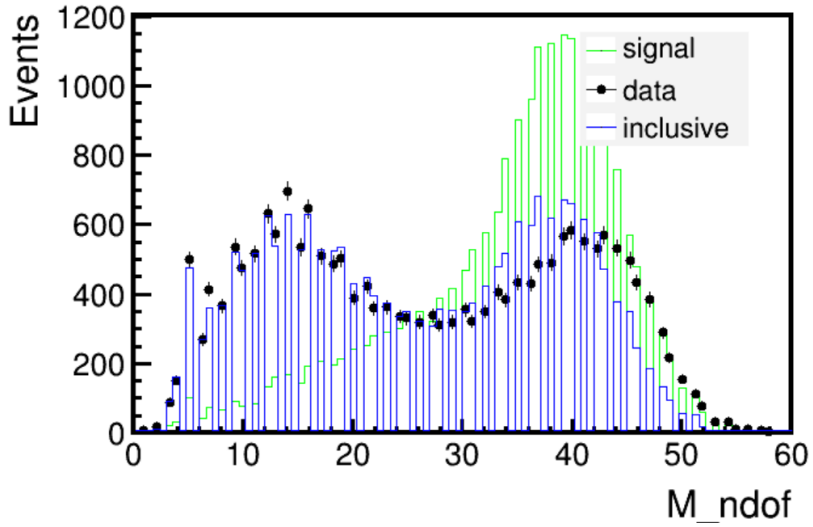
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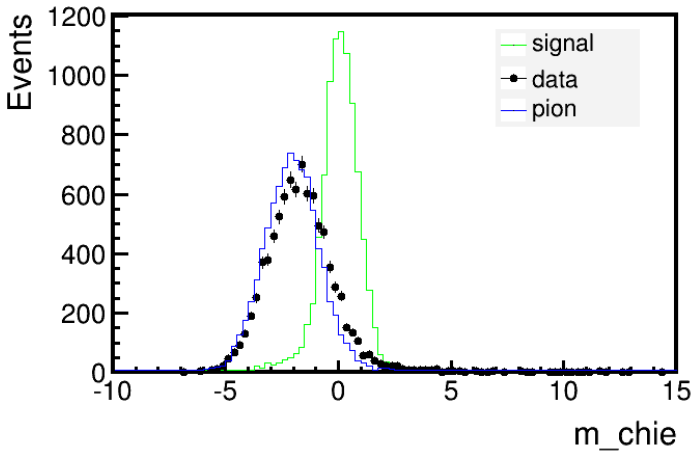
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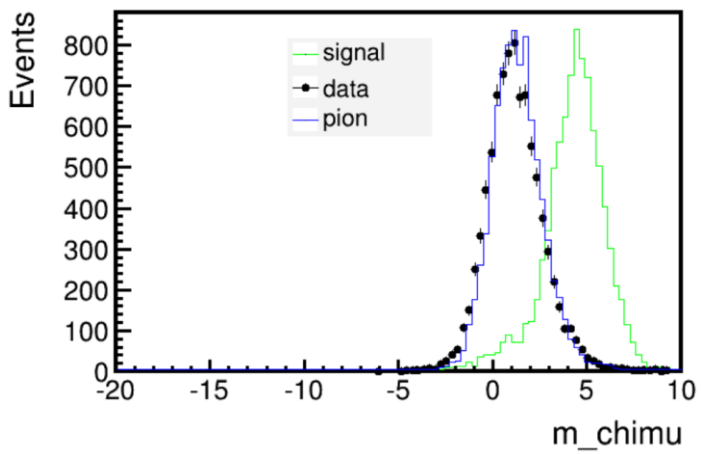
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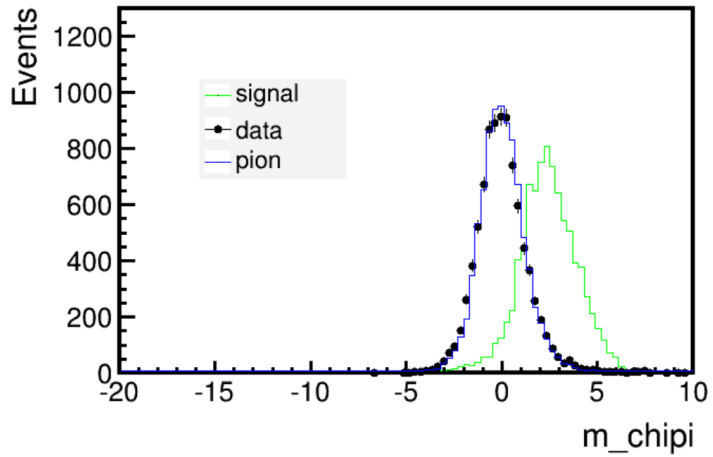
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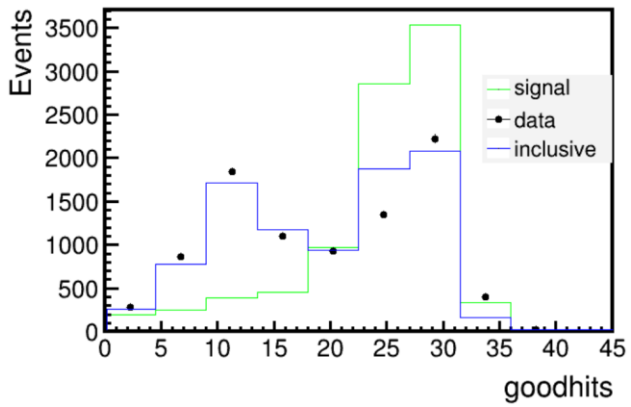
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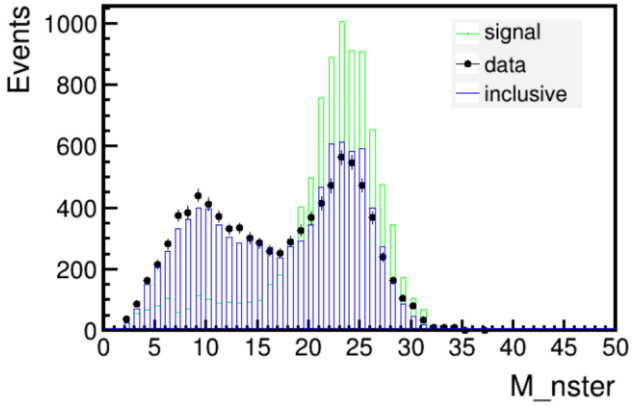
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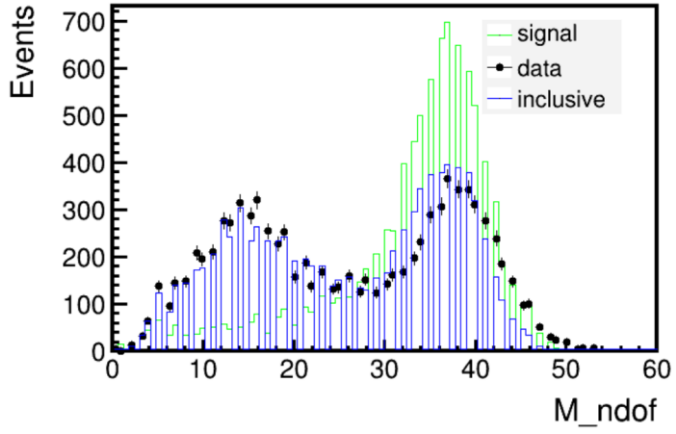
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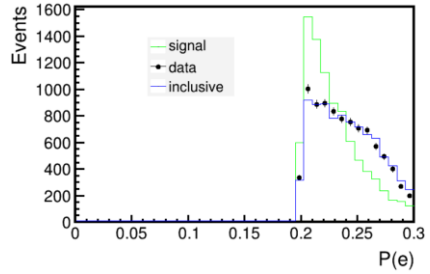
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P(e)

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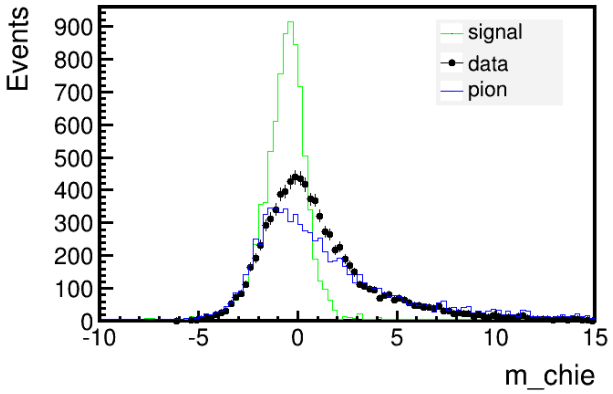

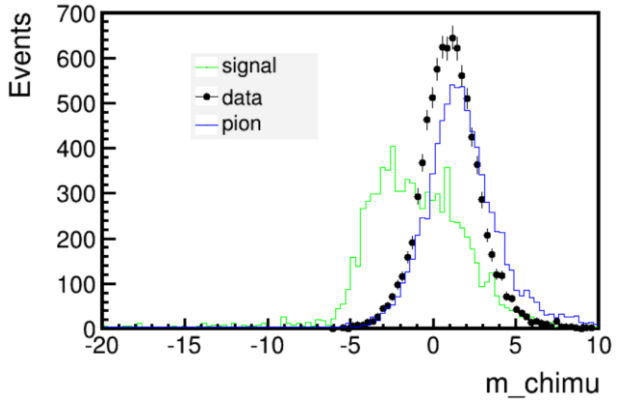

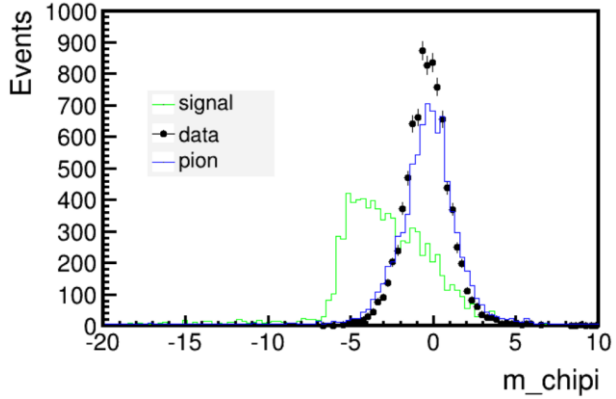

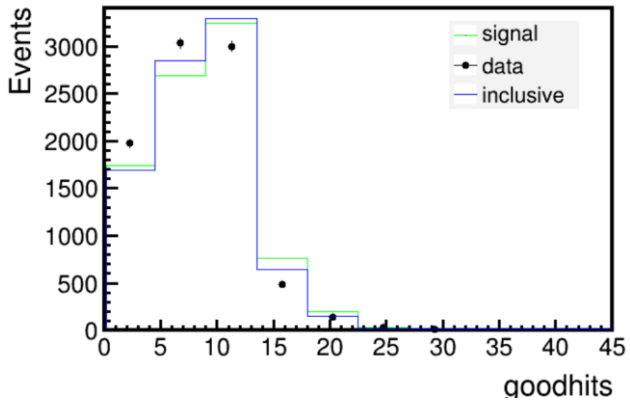

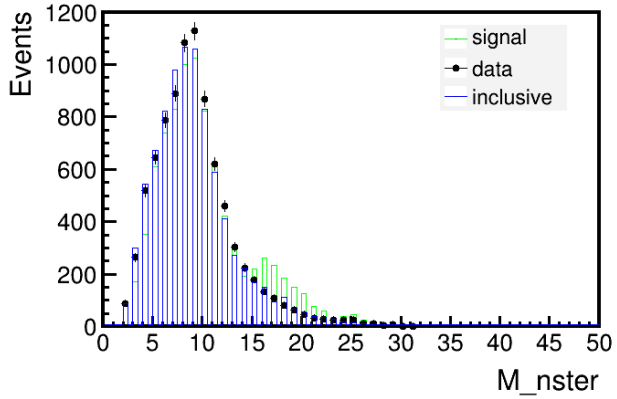

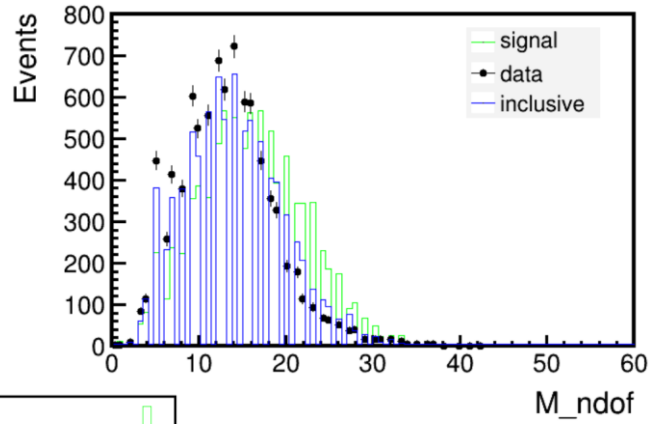

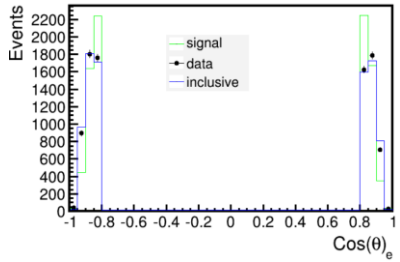

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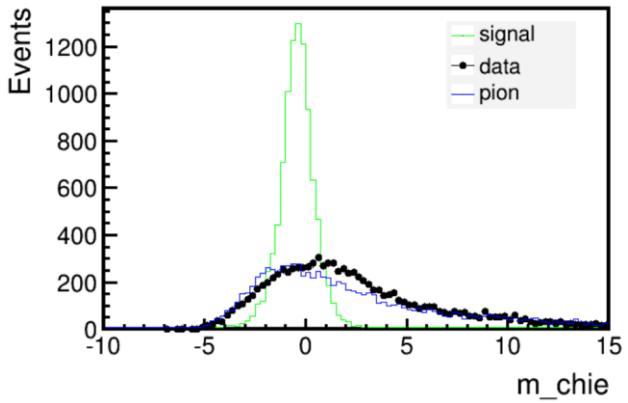

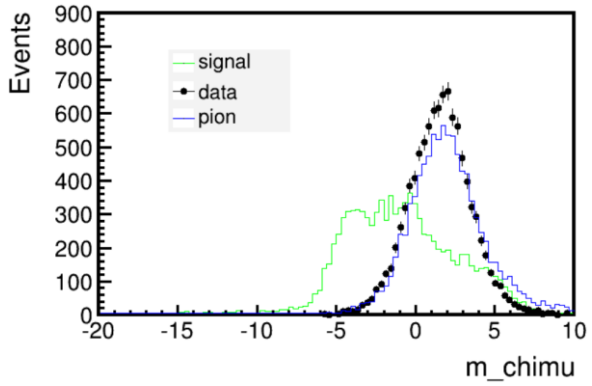

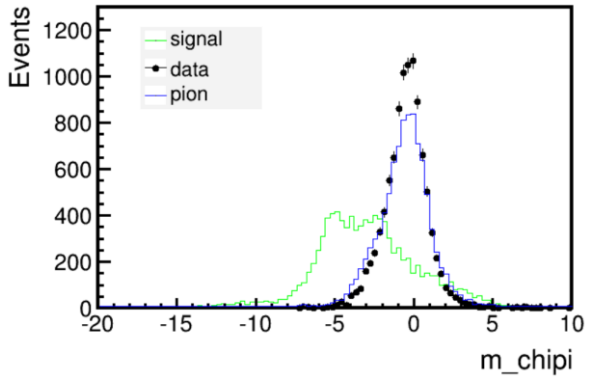

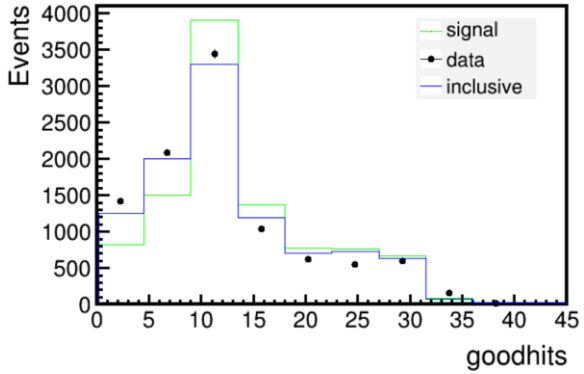

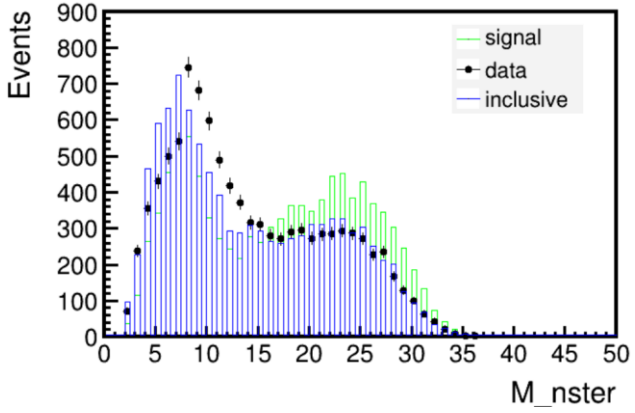

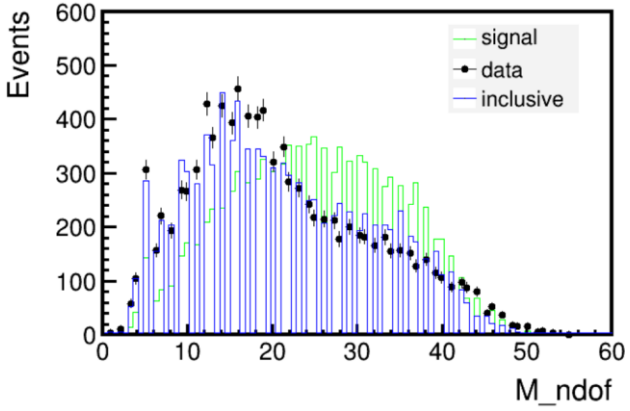

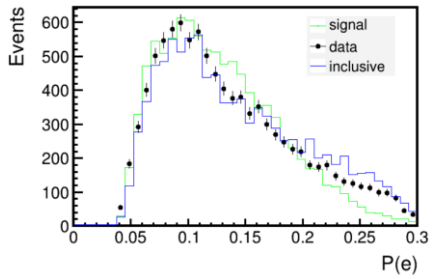

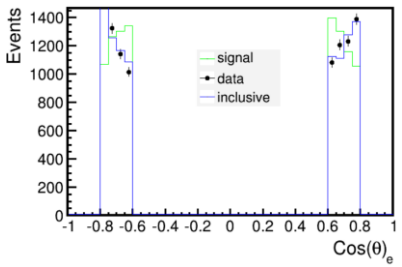

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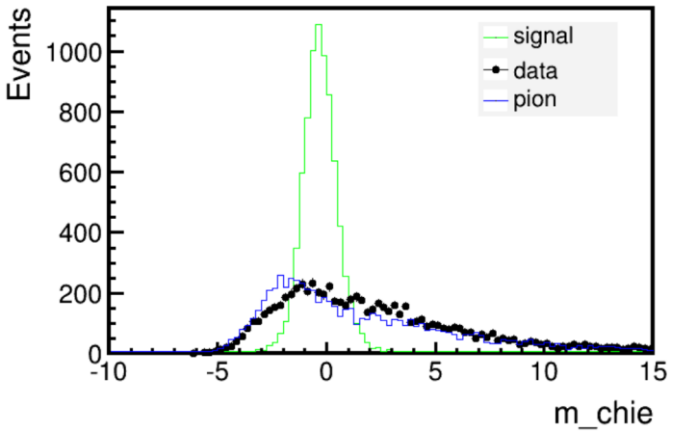
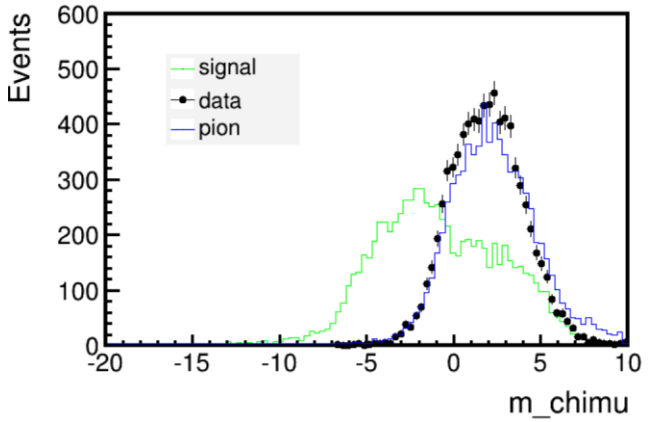
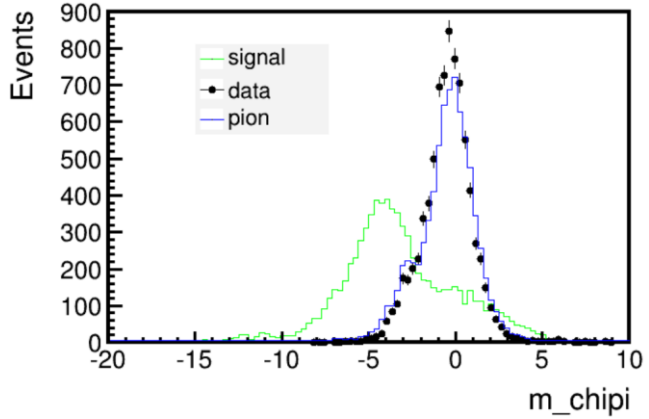
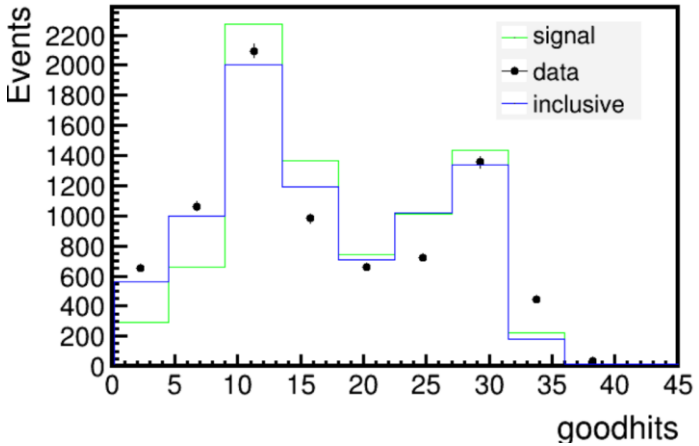
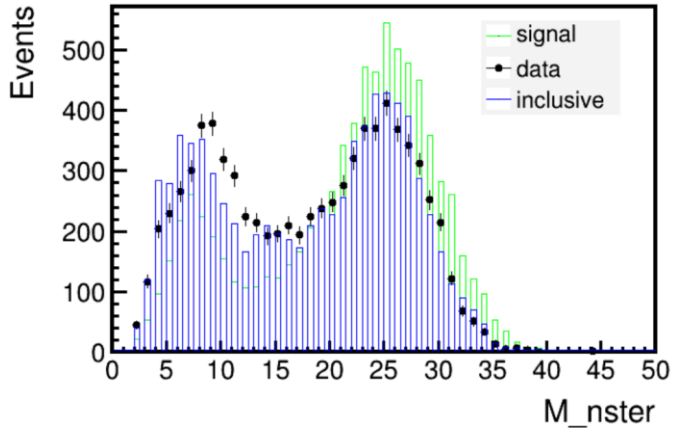
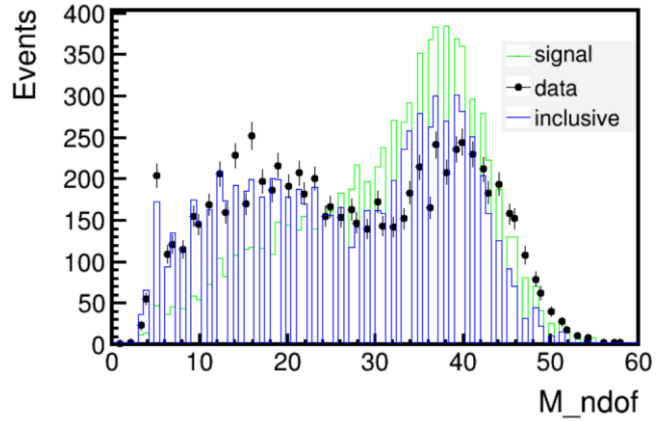


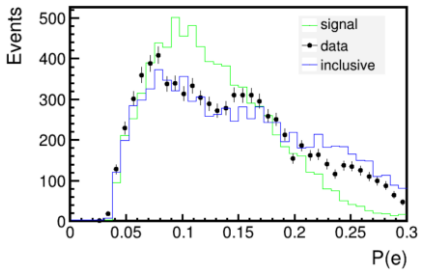


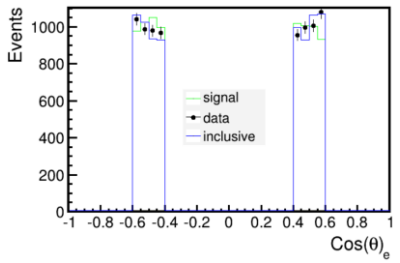




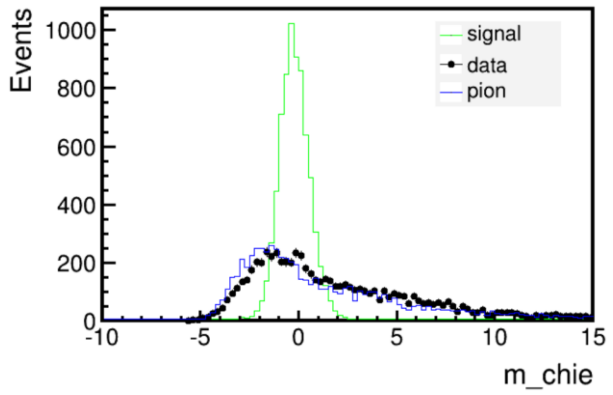


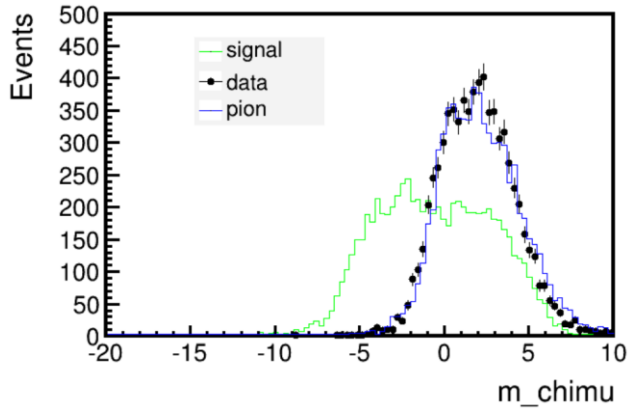


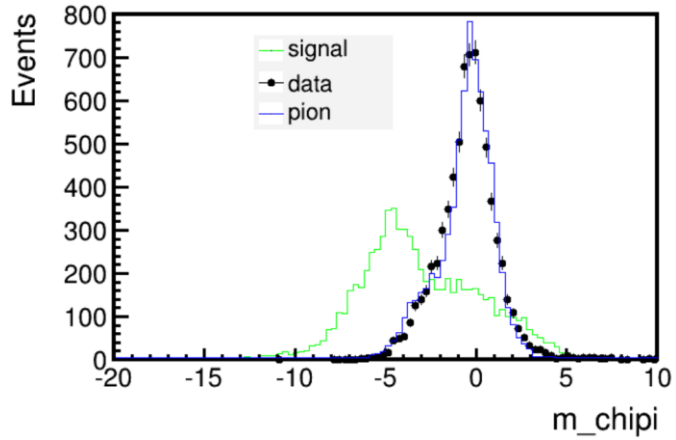


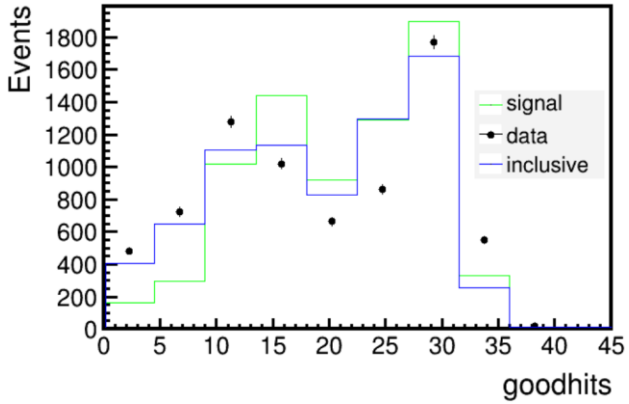


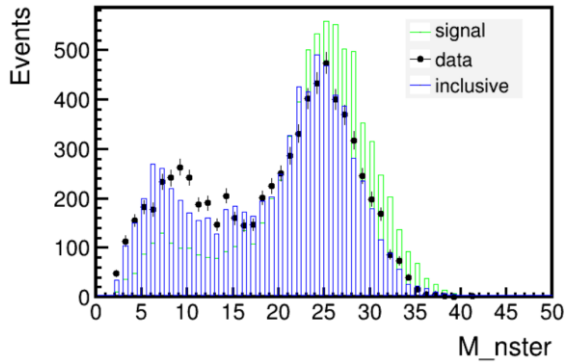
0.4>P_costheta>0.2

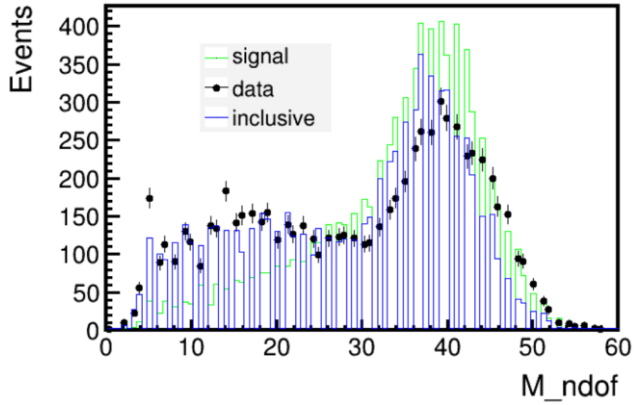


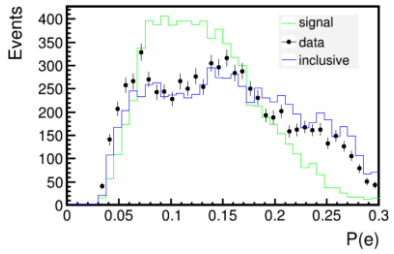


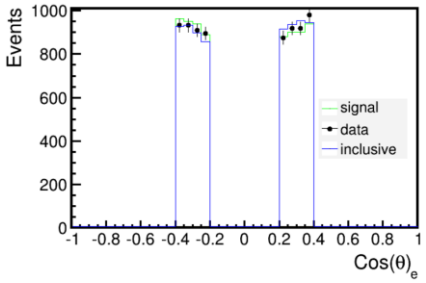




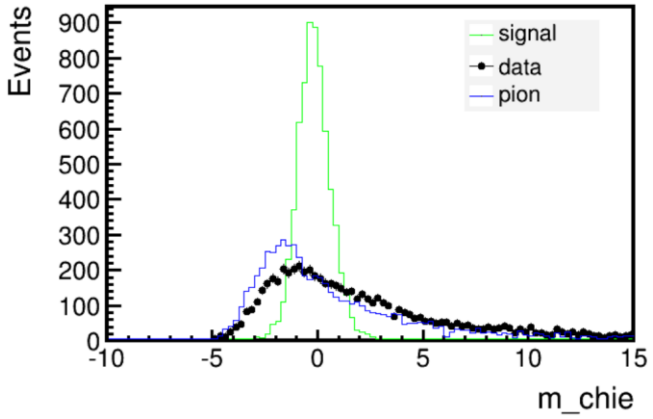


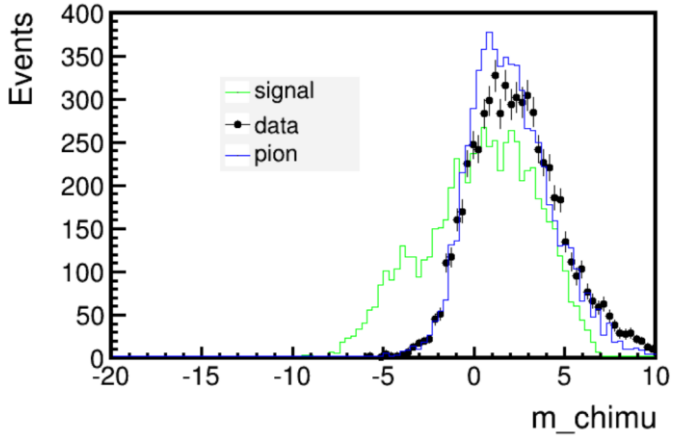


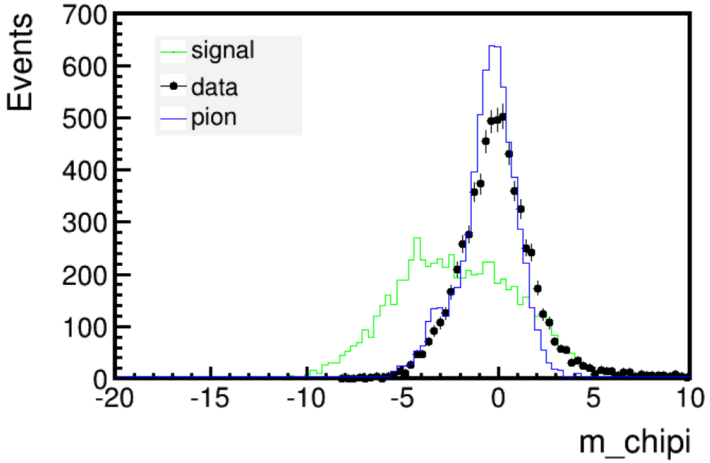


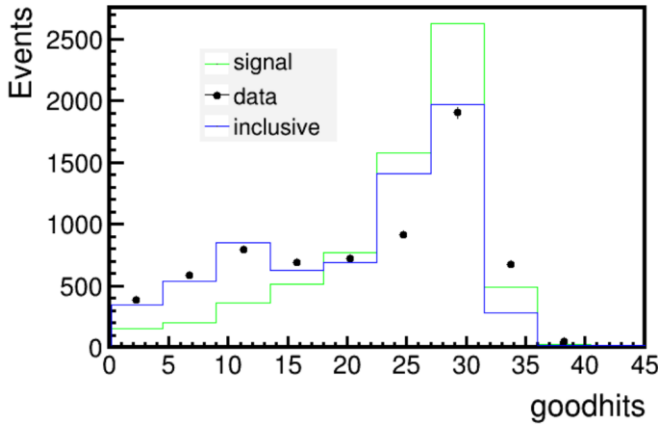


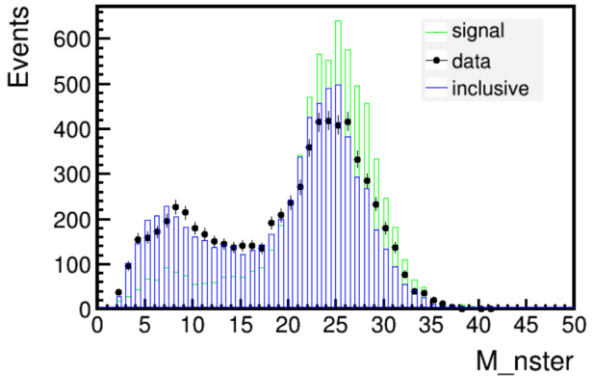
0.2>P_costheta>0

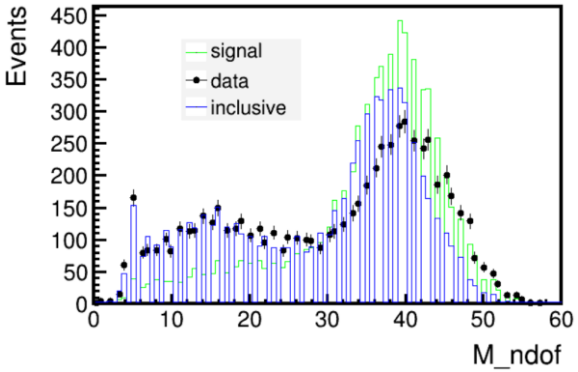


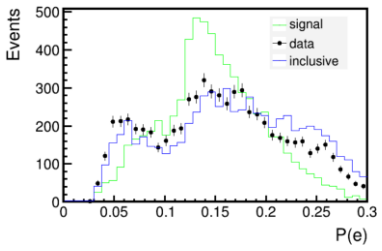


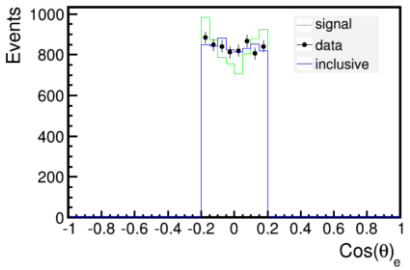




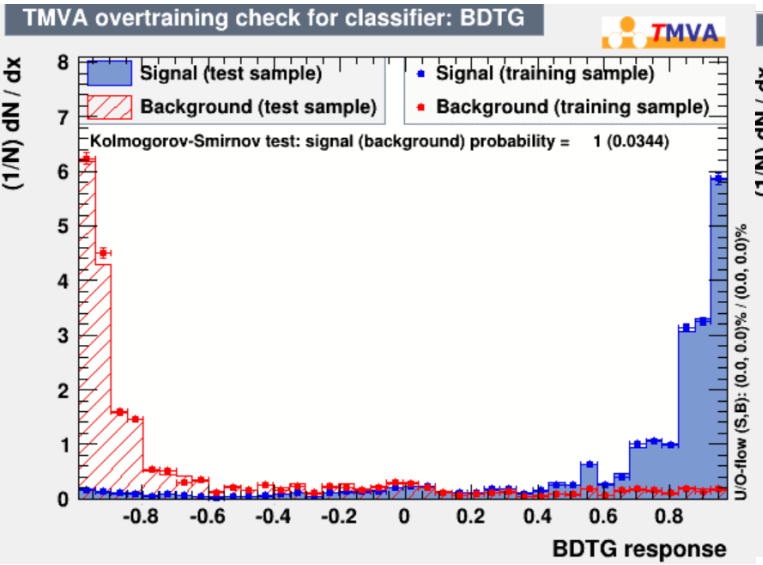


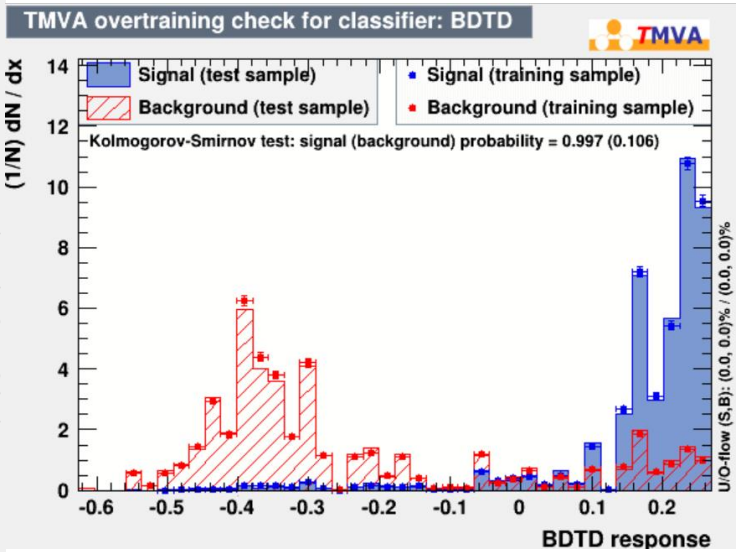


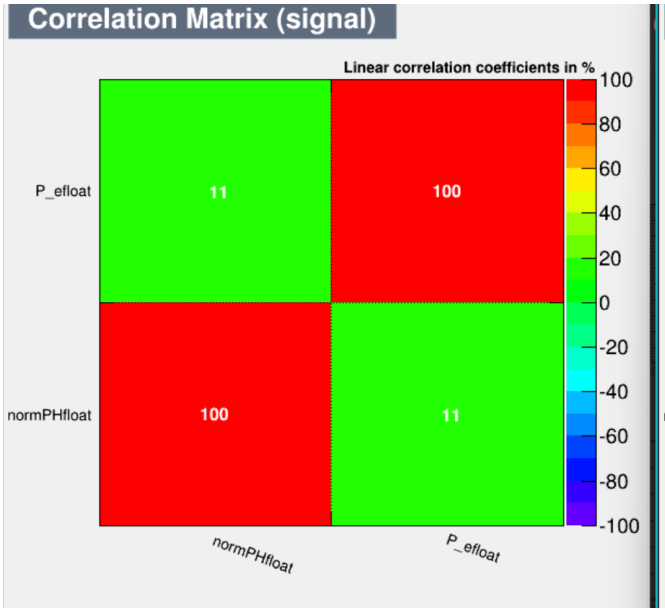


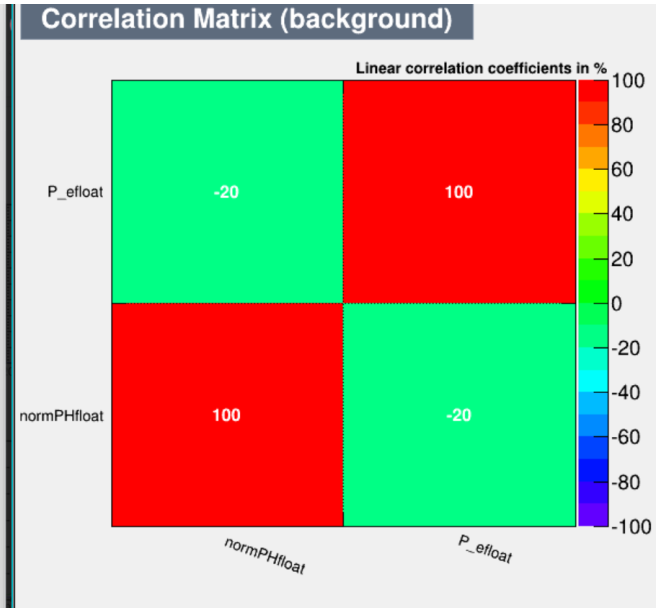


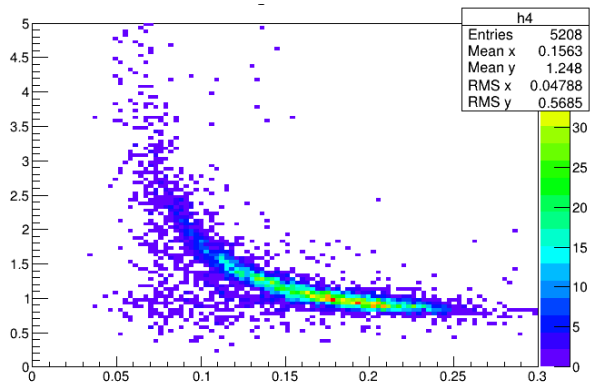
mva

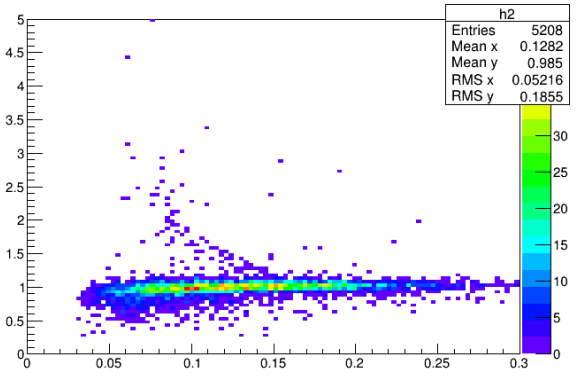

TMVA overtraining check for classifier: BDTG
TMVA
Signal (test sample)
Signal (training sample)
Background (test sample)
Background (training sample)
Kolmogorov-Smirnov test: signal (background) probability = 1 (0.0344)
(1/N) dN / dx
U/O-flow (S,B): (0.0, 0.0)% / (0.0, 0.0)%
BDTG response

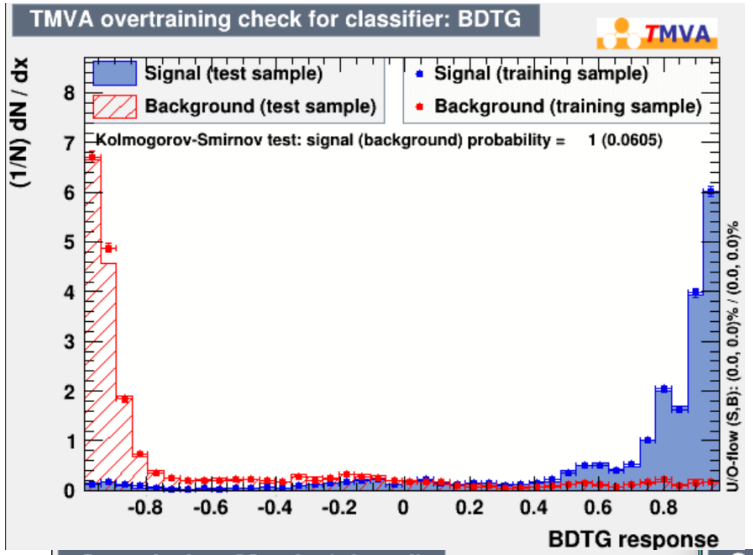

TMVA overtraining check for classifier: BDTD
TMVA
Signal (test sample)
Signal (training sample)
Background (test sample)
Background (training sample)
Kolmogorov-Smirnov test: signal (background) probability = 0.997 (0.106)
(1/N) dN / dx
U/O-flow (S,B): (0.0, 0.0)% / (0.0, 0.0)%
BDTD response

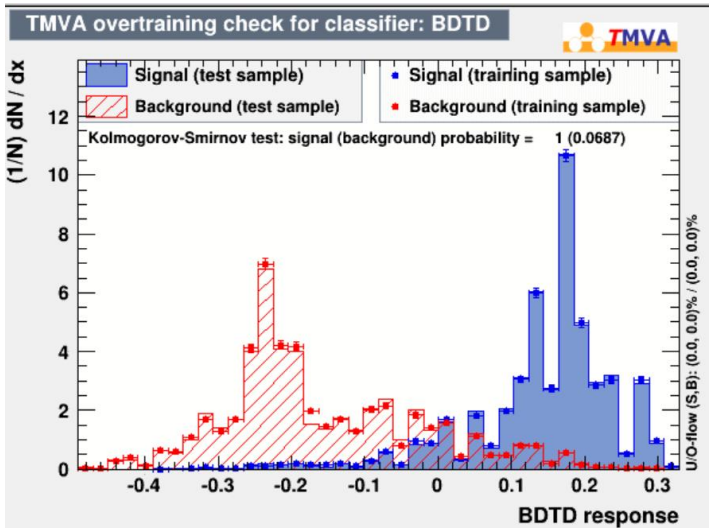

Correlation Matrix (signal)
Linear correlation coefficients in %
P_efloat
normPHfloat
11
100
100
11
normPHfloat
P_efloat

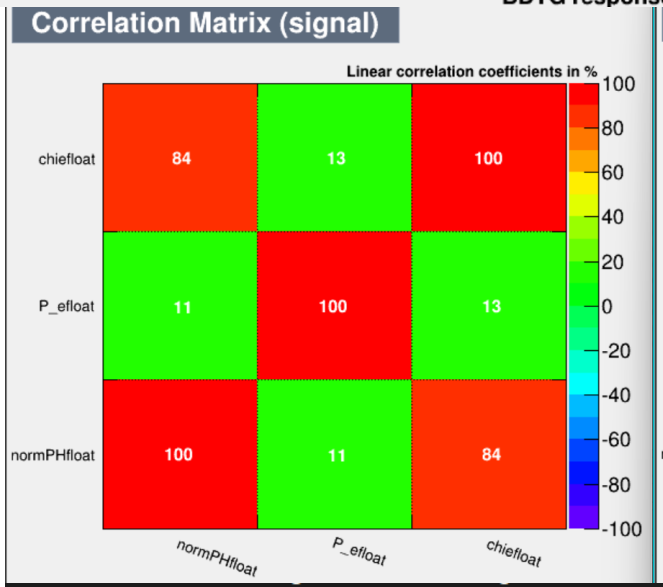

Correlation Matrix (background)
Linear correlation coefficients in %
P_efloat
normPHfloat
-20
100
100
-20
normPHfloat
P_efloat

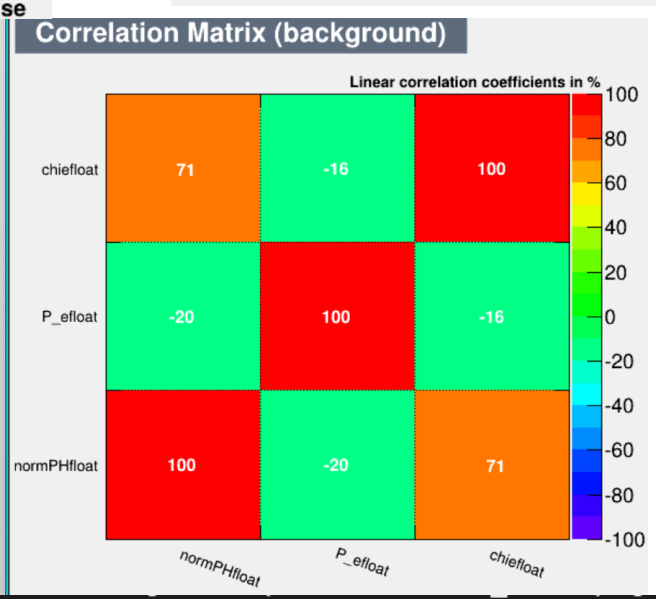

h4
Entries 5208
Mean x 0.1563
Mean y 1.248
RMS x 0.04788
RMS y 0.5685


h2
Entries 5208
Mean x 0.1282
Mean y 0.985
RMS x 0.05216
RMS y 0.1855



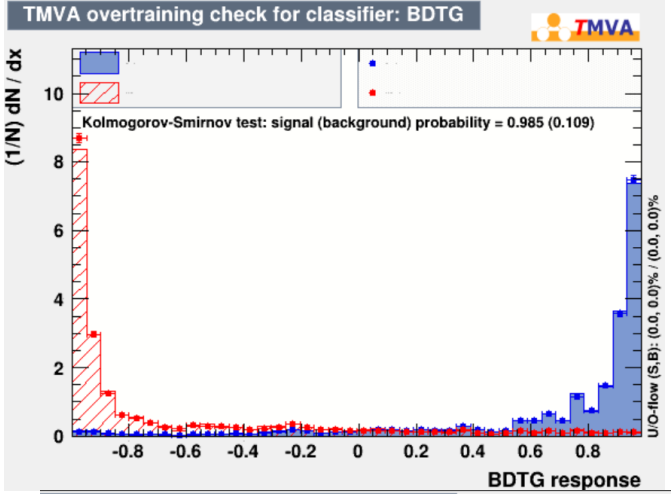


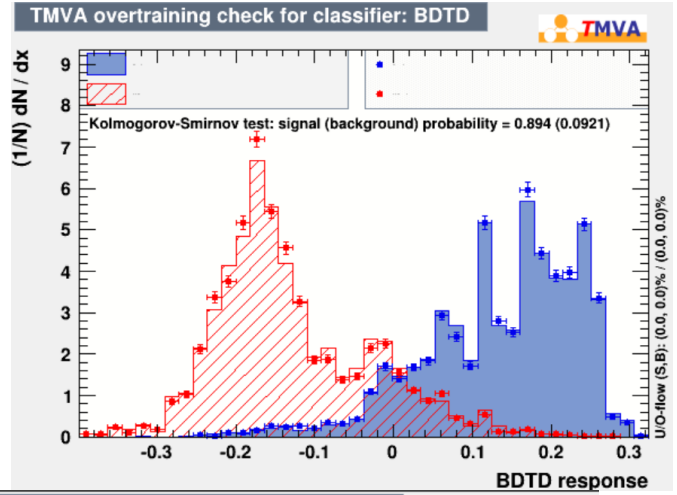


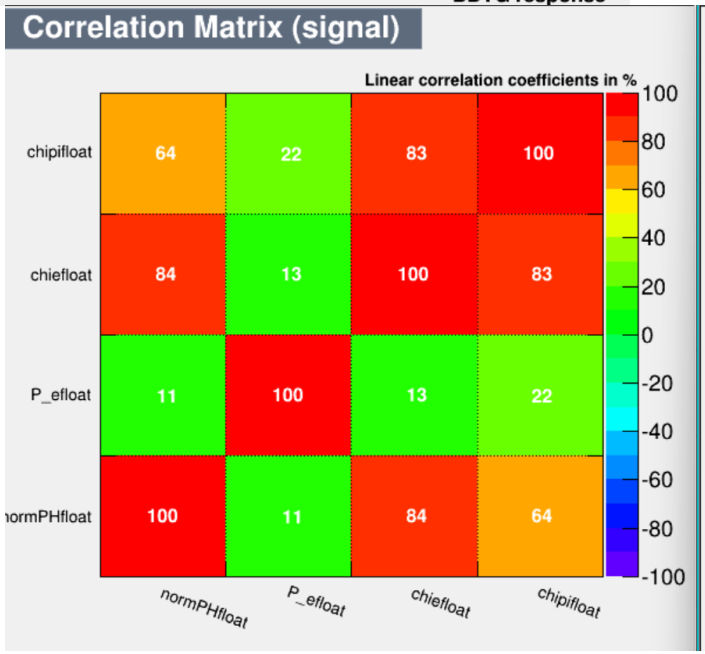


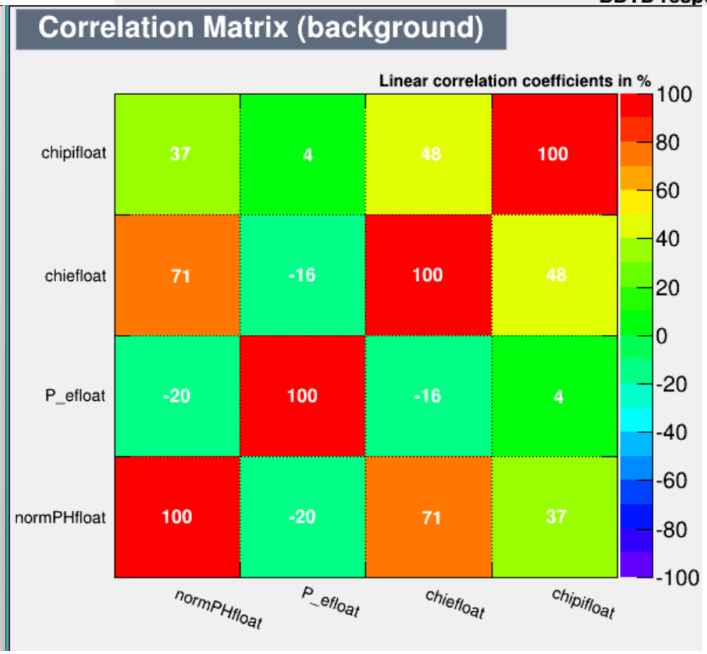
$$\text{m\_chi} = \frac{\left(\frac{dE}{dx}\right)_{measures} - \left(\frac{dE}{dx}\right)_{e,mu,pi,k,p\ expected}}{\sigma_{e,mu,pi,k,p}}$$

Classifier	(#signal, #backgr.)	Optimal-cut	S/sqrt(S+B)	NSig	NBkg	EffSig	EffBkg
BDTG:	(145, 26100)	0.7940	3.11093	91.9264	781.2477	0.634	0.02993
BDT:	(145, 26100)	0.2068	2.59312	29.79418	102.2193	0.2055	0.003916
BDTB:	(145, 26100)	0.7751	1.54787	131.9581	7135.882	0.9101	0.2734
BDTD:	(145, 26100)	0.1564	3.23075	84.28241	596.2794	0.5813	0.02285

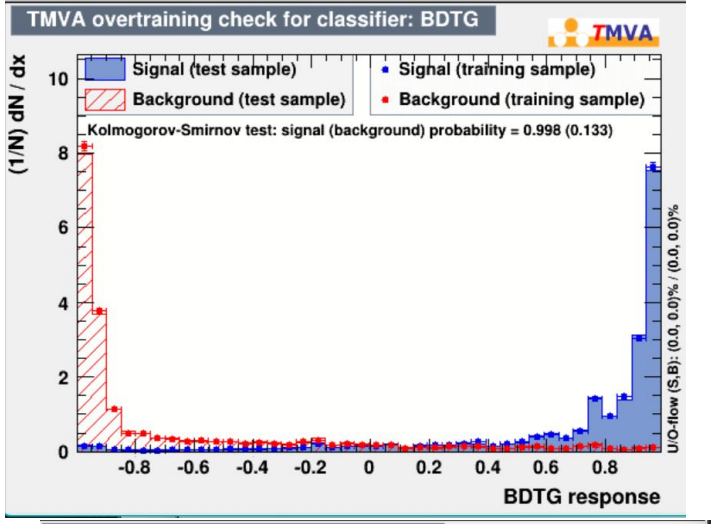


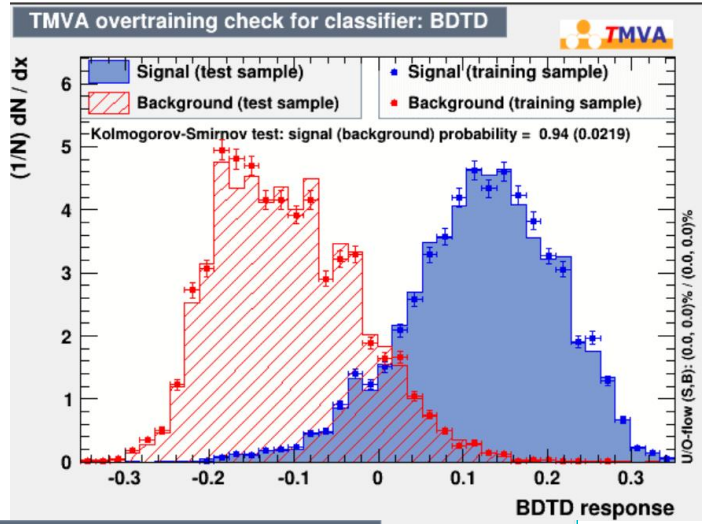


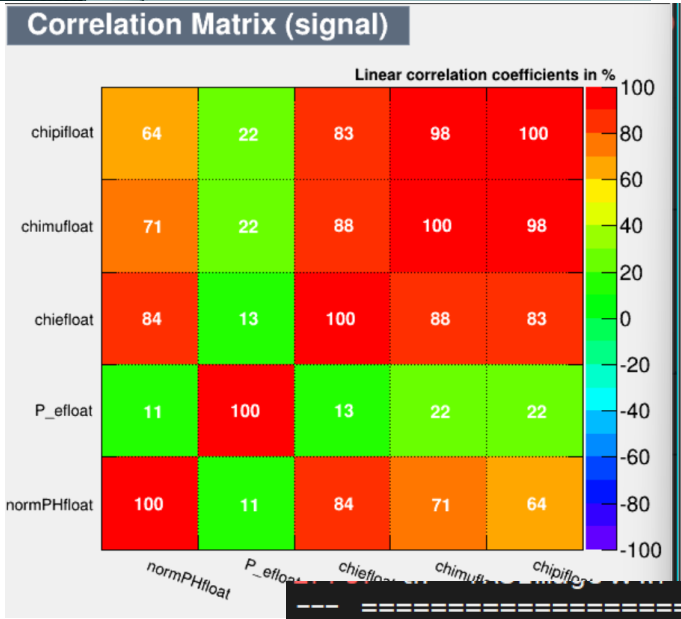


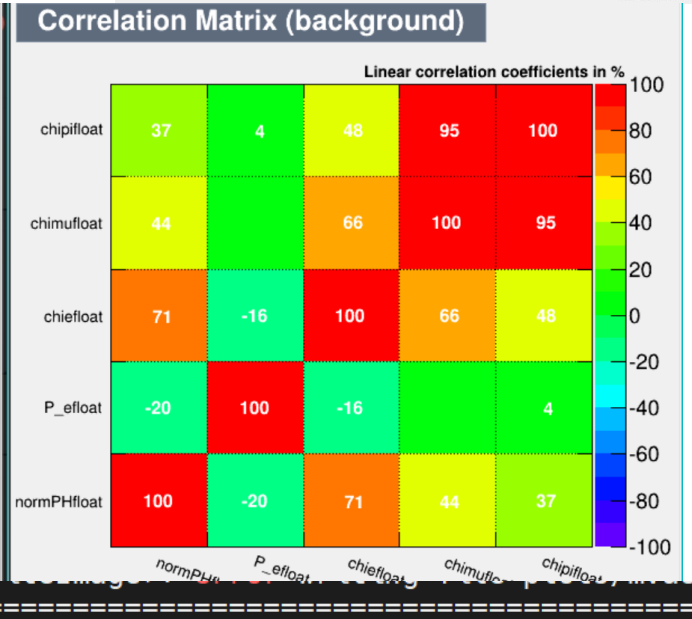



```
---  ===========================================================================================
---  Classifier   (  #signal, #backgr.)  Optimal-cut  S/sqrt(S+B)      NSig      NBkg   EffSig   EffBkg
---  -------------------------------------------------------------------------------------------
---        BDTG:  (      145,    26100)       0.9020      4.14936  71.62516  226.3428    0.494 0.008672
---         BDT:  (      145,    26100)       0.2374      4.30809  70.84339  199.5711   0.4886 0.007646
---        BDTB:  (      145,    26100)      -0.9997       2.5058  118.0227  2100.364   0.8139  0.08047
---        BDTD:  (      145,    26100)       0.1760      4.52317  62.13222  126.5573   0.4285 0.004849
---  -------------------------------------------------------------------------------------------
```

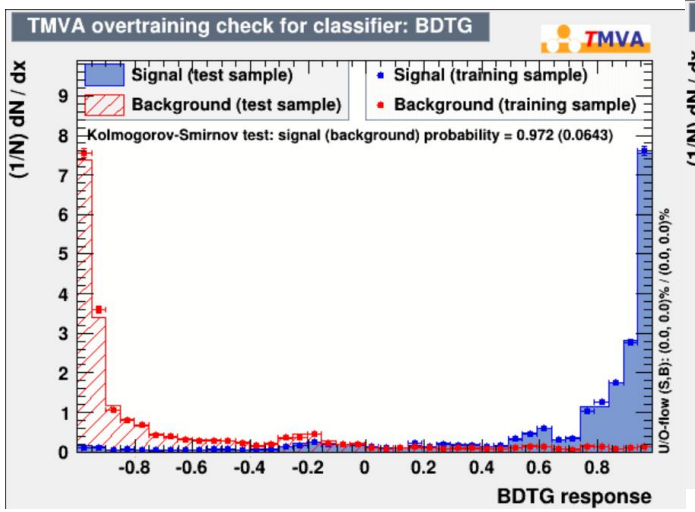


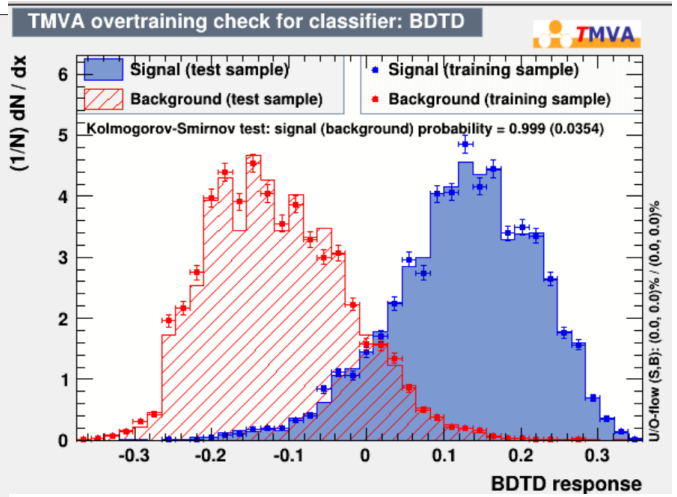


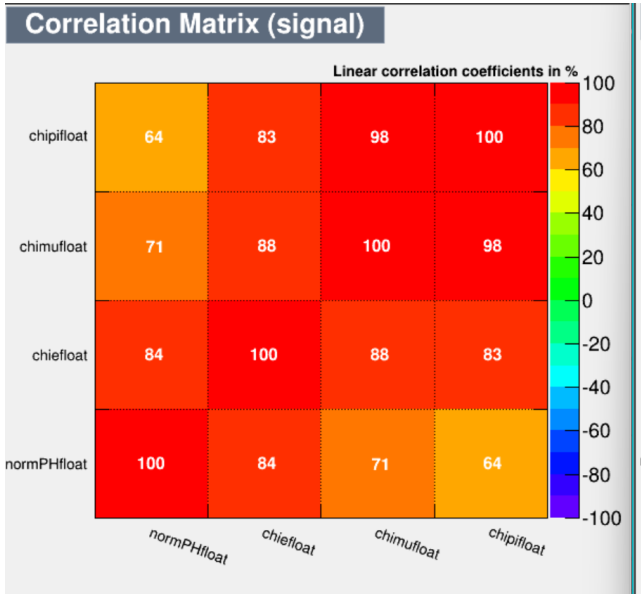


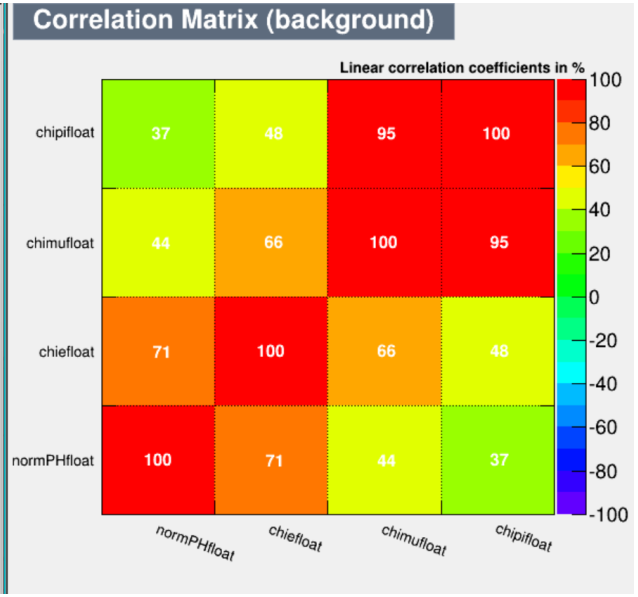



```
--- ========================================================================================
--- Classifier   (  #signal, #backgr.)  Optimal-cut  S/sqrt(S+B)      NSig      NBkg   EffSig   EffBkg
--- ----------------------------------------------------------------------------------------
---       BDTG:  (      145,    26100)       0.8987       4.17786  72.51861  228.7766   0.5001 0.008765
---        BDT:  (      145,    26100)       0.2311       4.86156  69.29226  133.8586   0.4779 0.005129
---       BDTB:  (      145,    26100)      -0.9997        2.5058  118.0227  2100.364   0.8139  0.08047
---       BDTD:  (      145,    26100)       0.1450       4.83492  60.22122  94.91794   0.4153 0.003637
--- ----------------------------------------------------------------------------------------
```

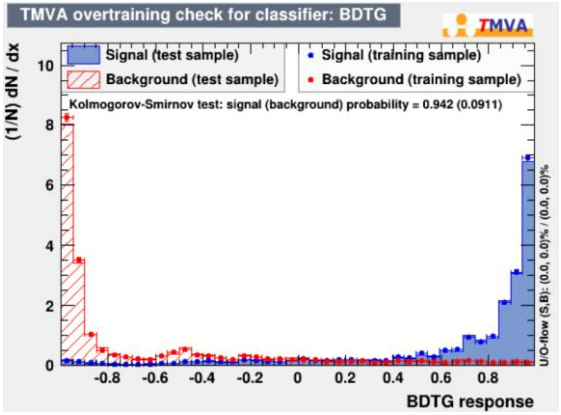


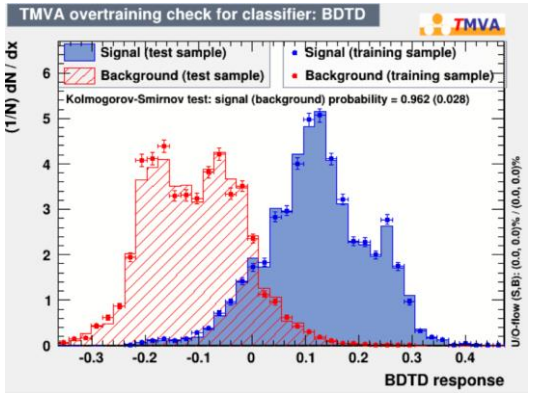


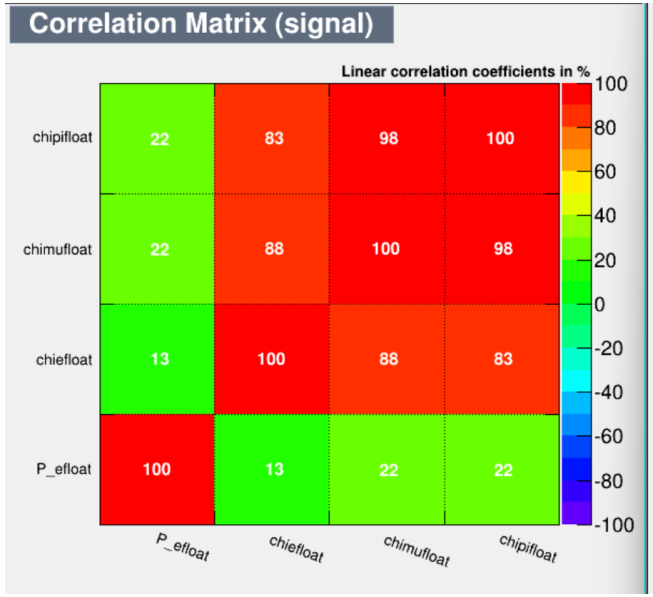


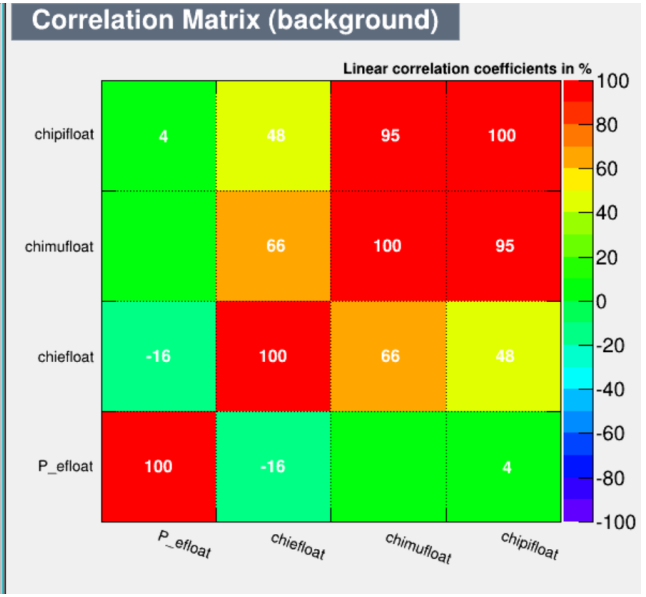



```
---  ===========================================================================================
---  Classifier   (  #signal, #backgr.)  Optimal-cut  S/sqrt(S+B)      NSig      NBkg   EffSig   EffBkg
---  -------------------------------------------------------------------------------------------
---       BDTG:  (      145,    26100)       0.8567       4.0663  84.04664  343.1649   0.5796  0.01315
---        BDT:  (      145,    26100)       0.2371      4.80147  69.72657    141.16   0.4809 0.005408
---       BDTB:  (      145,    26100)      -0.9997       2.5058  118.0227  2100.364   0.8139  0.08047
---       BDTD:  (      145,    26100)       0.1512        4.705   60.457  104.6531   0.4169  0.00401
---  -------------------------------------------------------------------------------------------
```

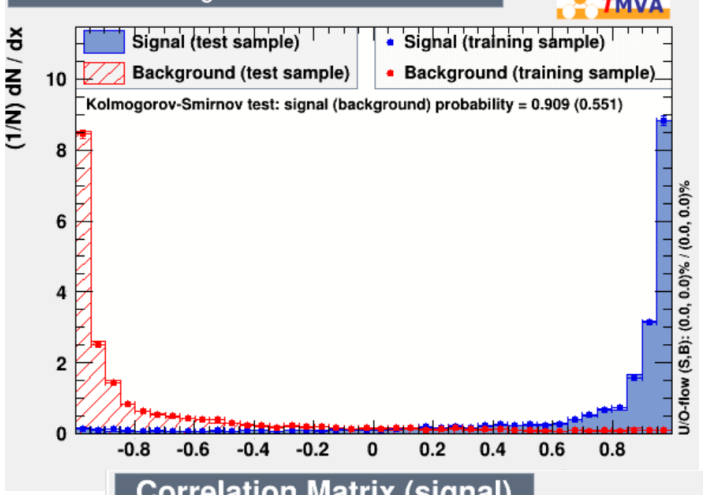


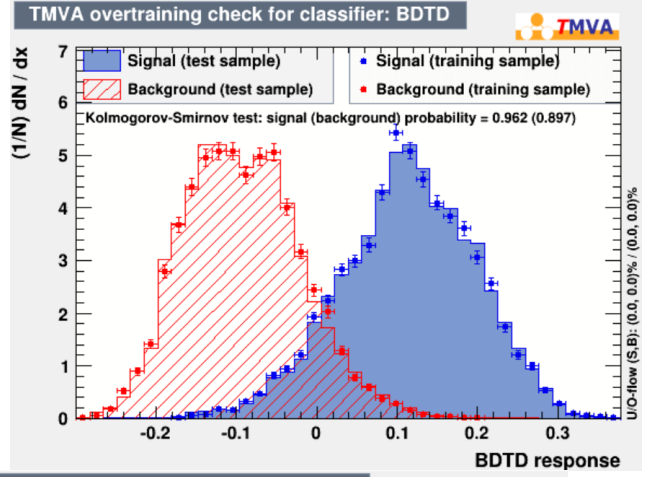


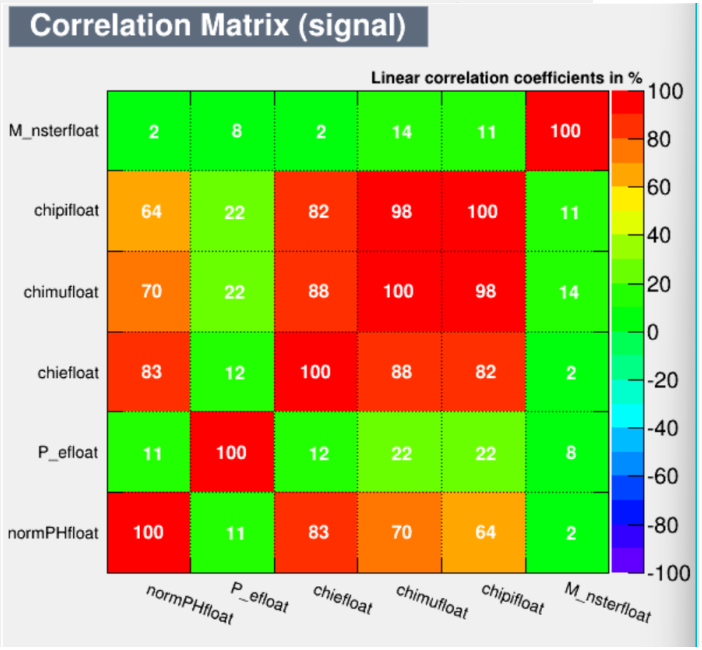


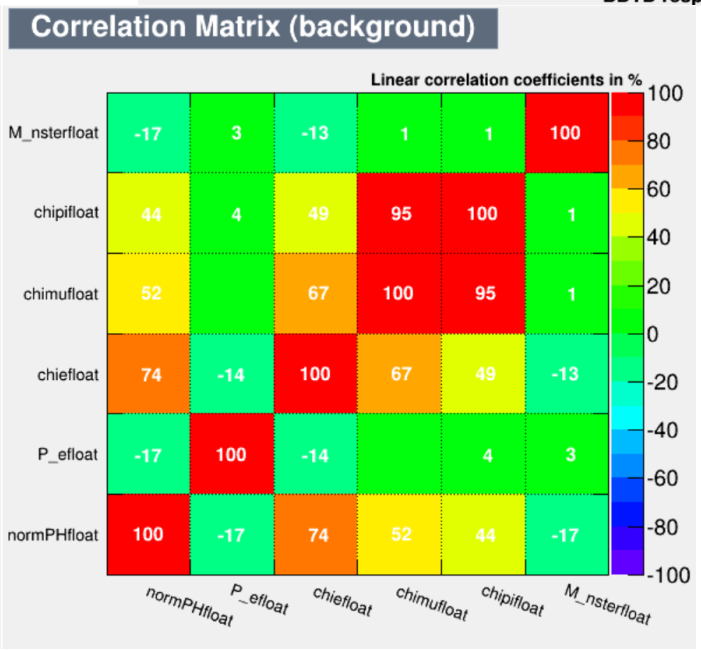



```
--- ========================================================================================
--- Classifier   (  #signal, #backgr.)  Optimal-cut  S/sqrt(S+B)      NSig      NBkg   EffSig   EffBkg
--- ----------------------------------------------------------------------------------------
---       BDTG:  (      145,    26100)       0.8449      4.13292  85.84596  345.5987    0.592  0.01324
---        BDT:  (      145,    26100)       0.2222      4.89136  68.27471  126.5573   0.4709 0.004849
---       BDTB:  (      145,    26100)       0.4001      2.64987   111.843  1669.582   0.7713  0.06397
---       BDTD:  (      145,    26100)       0.1218       4.5987  73.1887  180.1007   0.5047   0.0069
--- ----------------------------------------------------------------------------------------
```







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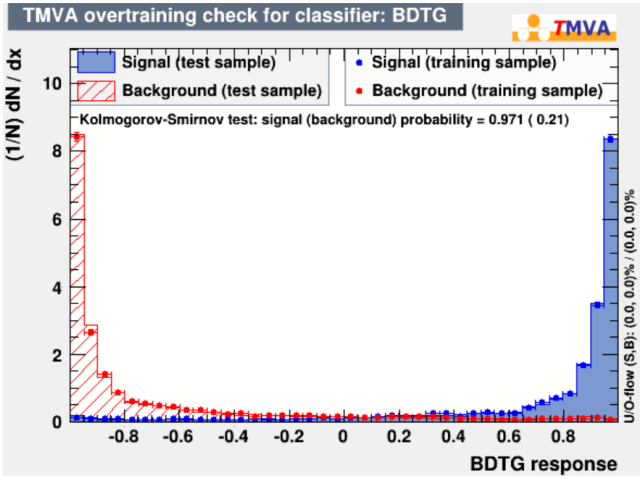
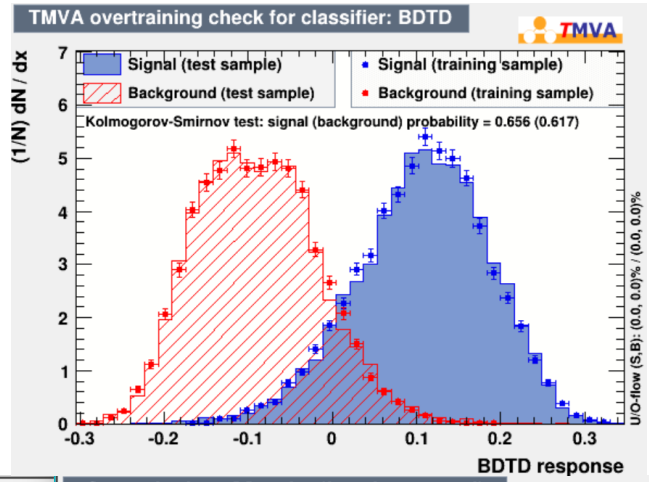
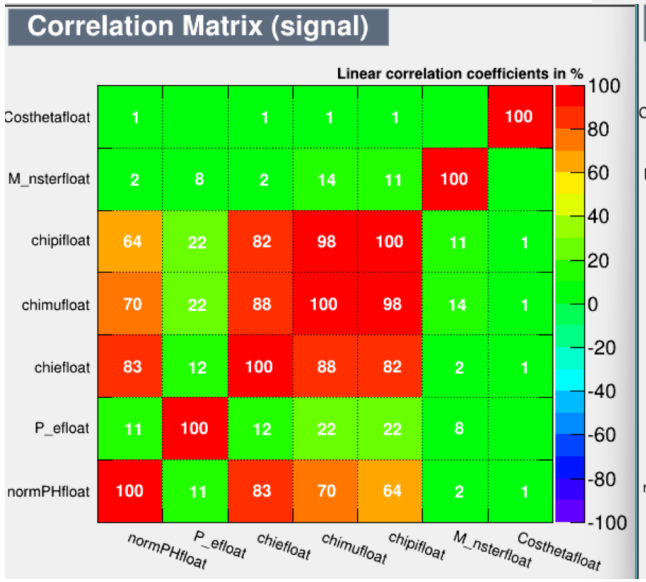
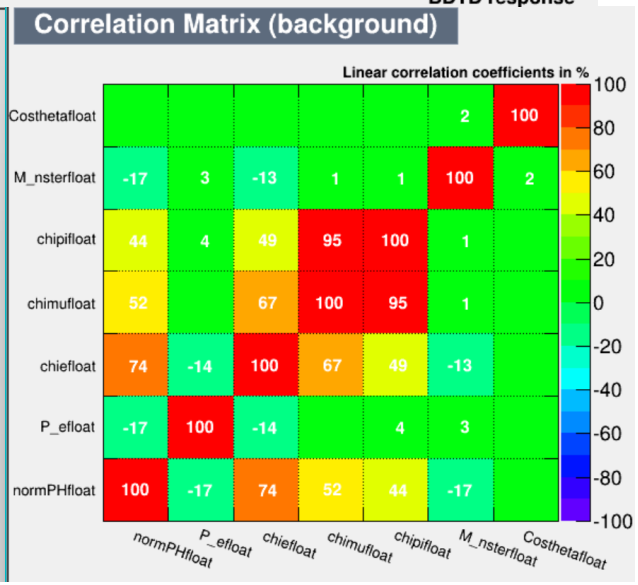
---  ==========================================================================================
---  Classifier   (  #signal, #backgr.)  Optimal-cut  S/sqrt(S+B)      NSig      NBkg   EffSig   EffBkg
---  ------------------------------------------------------------------------------------------
---       BDTG:  (      145,    26100)       0.9302       5.02599  74.02204  142.8876   0.5105 0.005475
---        BDT:  (      145,    26100)       0.2523       5.12592  64.65745  94.45115   0.4459 0.003619
---       BDTB:  (      145,    26100)       0.9551       2.75666  114.9079  1622.622   0.7925  0.06217
---       BDTD:  (      145,    26100)       0.1429       4.85765  53.50361  67.81108    0.369 0.002598
---  ------------------------------------------------------------------------------------------
```







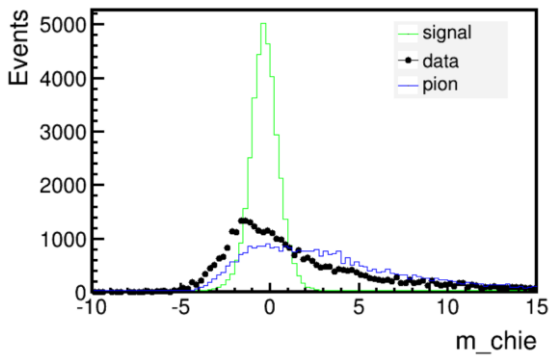


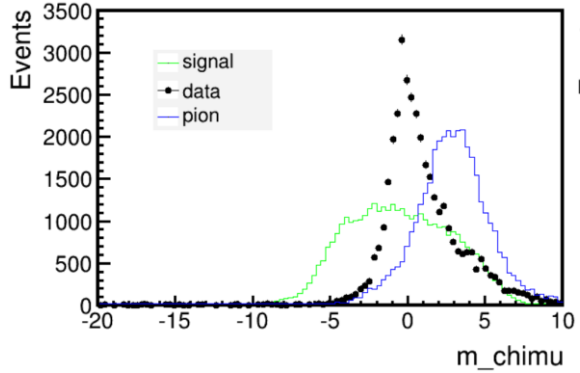

```
---  ==========================================================================================
---  Classifier   (  #signal, #backgr.)  Optimal-cut  S/sqrt(S+B)      NSig      NBkg   EffSig   EffBkg
---  ------------------------------------------------------------------------------------------
---       BDTG:  (      145,    26100)       0.9247      4.86982  72.69752  150.1531   0.5014 0.005753
---        BDT:  (      145,    26100)       0.1981      5.21273  71.40785  116.2476   0.4925 0.004454
---       BDTB:  (      145,    26100)       0.9551      2.75666  114.9079  1622.622   0.7925  0.06217
---       BDTD:  (      145,    26100)       0.1131      4.56155  71.11739  171.9495   0.4905 0.006588
---  ------------------------------------------------------------------------------------------
```

```
13   int    m_stat;       // Track Fit Quality status flag
14   double m_chi2;       // chisq of track fit
15   int    m_ndof;       // degree of freedom
16   int    m_nster;      // number of  stereo hits contained
17   int    m_firstLayer; // layer id of first hit in PR hits collection
18   int    m_lastLayer;  // layer id of last hit in PR hits collection
19   int    m_nlayer;     // number of layer that track passed
20   double m_pxy;        // Track Momentum(GeV)
21   double m_px;
22   double m_py;
23   double m_pz;
24   double m_p;
25   double m_theta;      // The Angles
26   double m_phi;        // Need to config
27   double m_x;          // The Coordinate of Track origin(m)
28   double m_y;
29   double m_z;
30   double m_r;
31 };
32
```

```
7  protected:
8   int    m_trackId ; //Track ID Add 2005-10-18
9   int    m_particleId;    //Particle ID from De/Dx
0   int    m_status;        //Status
1   int    m_trunc_alg;    //truncate method
2   double m_chi[5]; //Number of Chi_dEdx for different particles
3                           //0: e  1: mu   2: pi  3: K  4:p
4   int    m_numGoodHits;   //No. of good de/dx hits(exclude overflow)
5   int    m_numTotalHits;  //No. of good de/dx hits(include overflow)
6   double m_probPH;        //Most probable pulse height from truncated mean
7   double m_normPH;     //normalized pulse height
8   double m_errorPH;      //resolution of truncated mean
9   double m_twentyPH;    //de/dx value of bitrunction rate equal to 20%
0 };
1
```

E,mu,pi weighted之后的对比


Events
signal
data
pion
m_chie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data
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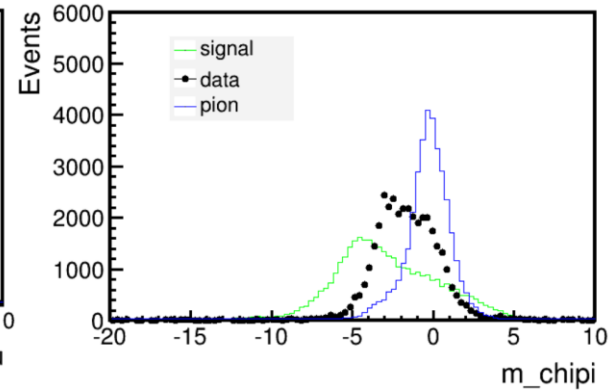
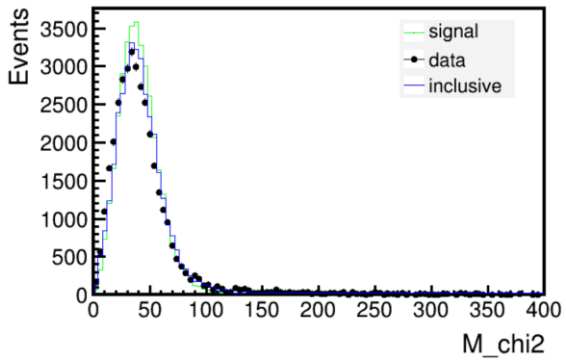
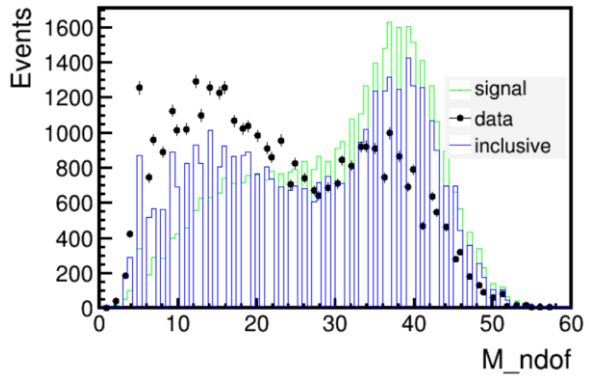
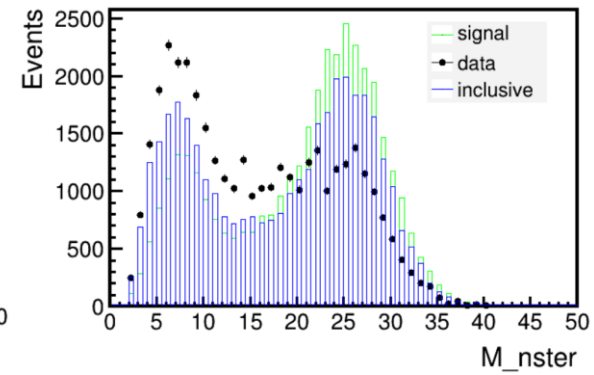
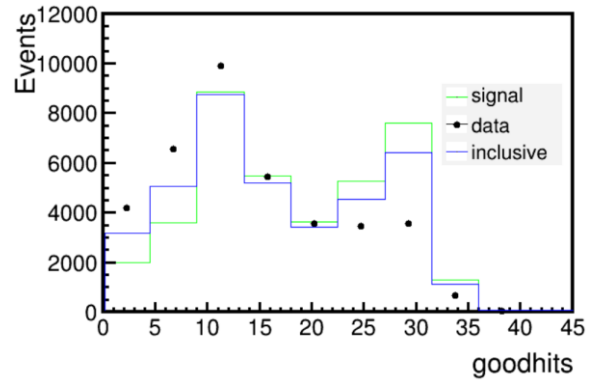
m_chimu

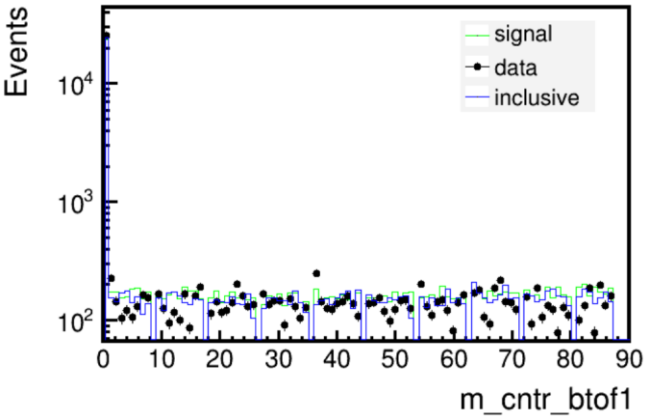

Events
signal
data
pion
m_chipi

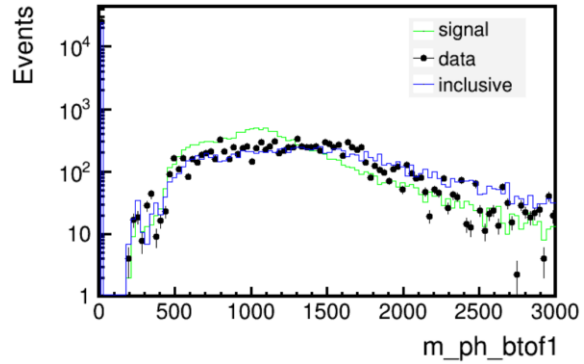

Events
signal
data
inclusive
M_chi2


Events
signal
data
inclusive
M_ndof


Events
signal
data
inclusive
M_nster


Events
signal
data
inclusive
goodhits


Events
signal
data
inclusive
m_cntr_btof1


Events
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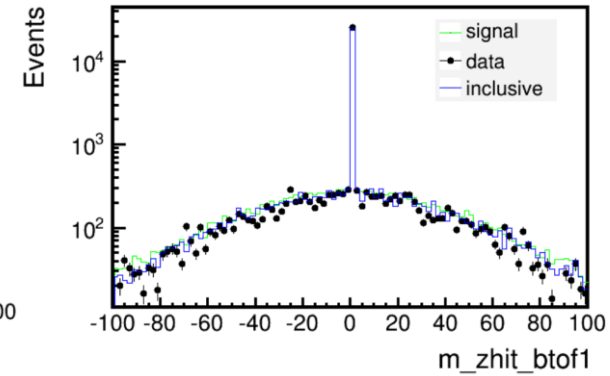
data
inclusive
m_ph_btof1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data
inclusive
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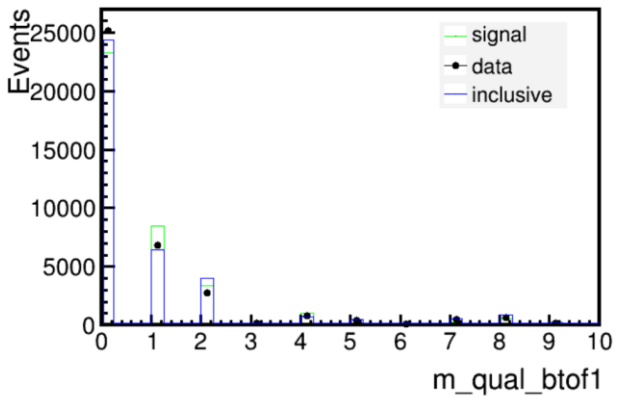
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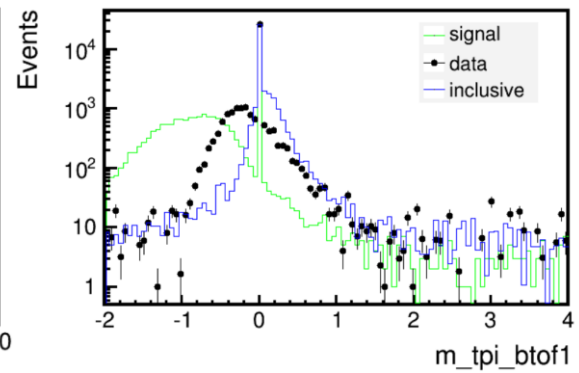
signal
data
inclusive
m_qual_btof1


Events
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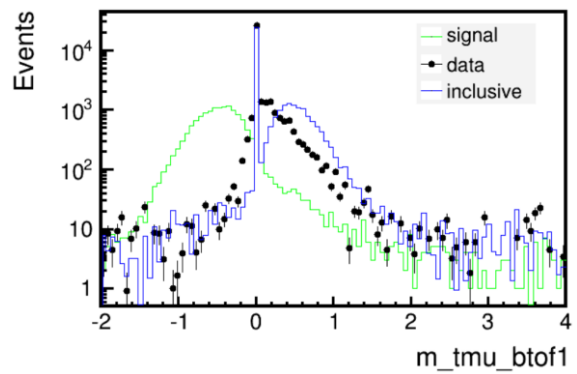
data
inclusive
m_tpi_btof1


Events
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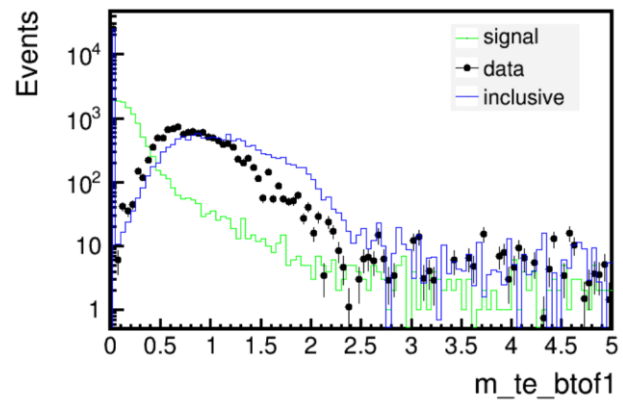
data
inclusive
m_tmu_btof1


Events
signal
data
inclusive
m_te_btof1