Control channel update

1.0 M signal events

$B^+ \rightarrow J/\psi\ K^+$

$J/\psi \rightarrow \mu^+\ \mu^-$

$B^- \rightarrow$ generic

27 Nov. 2023

Assumptions

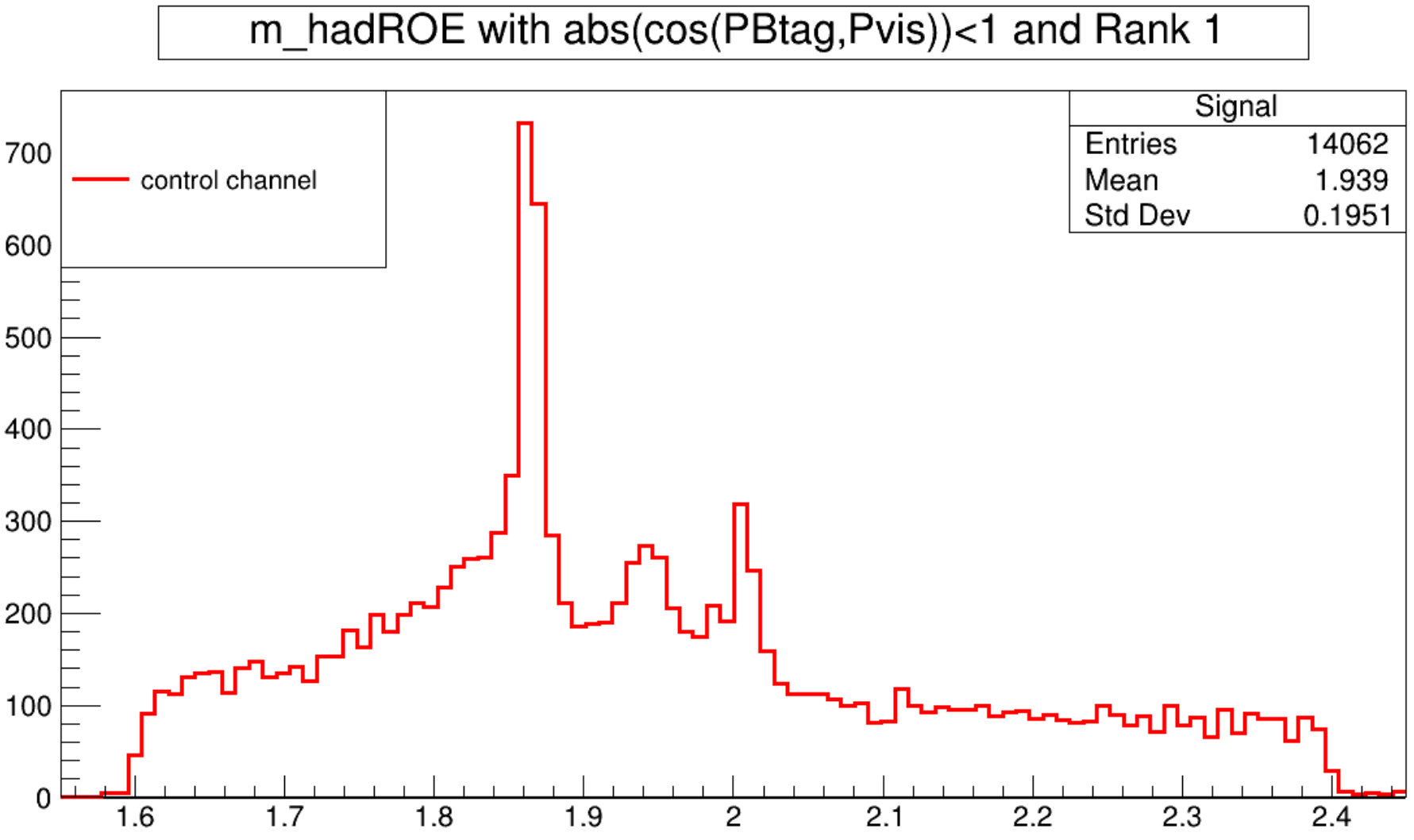
- Considered second lepton from the J/ψ decay as the missing particle.

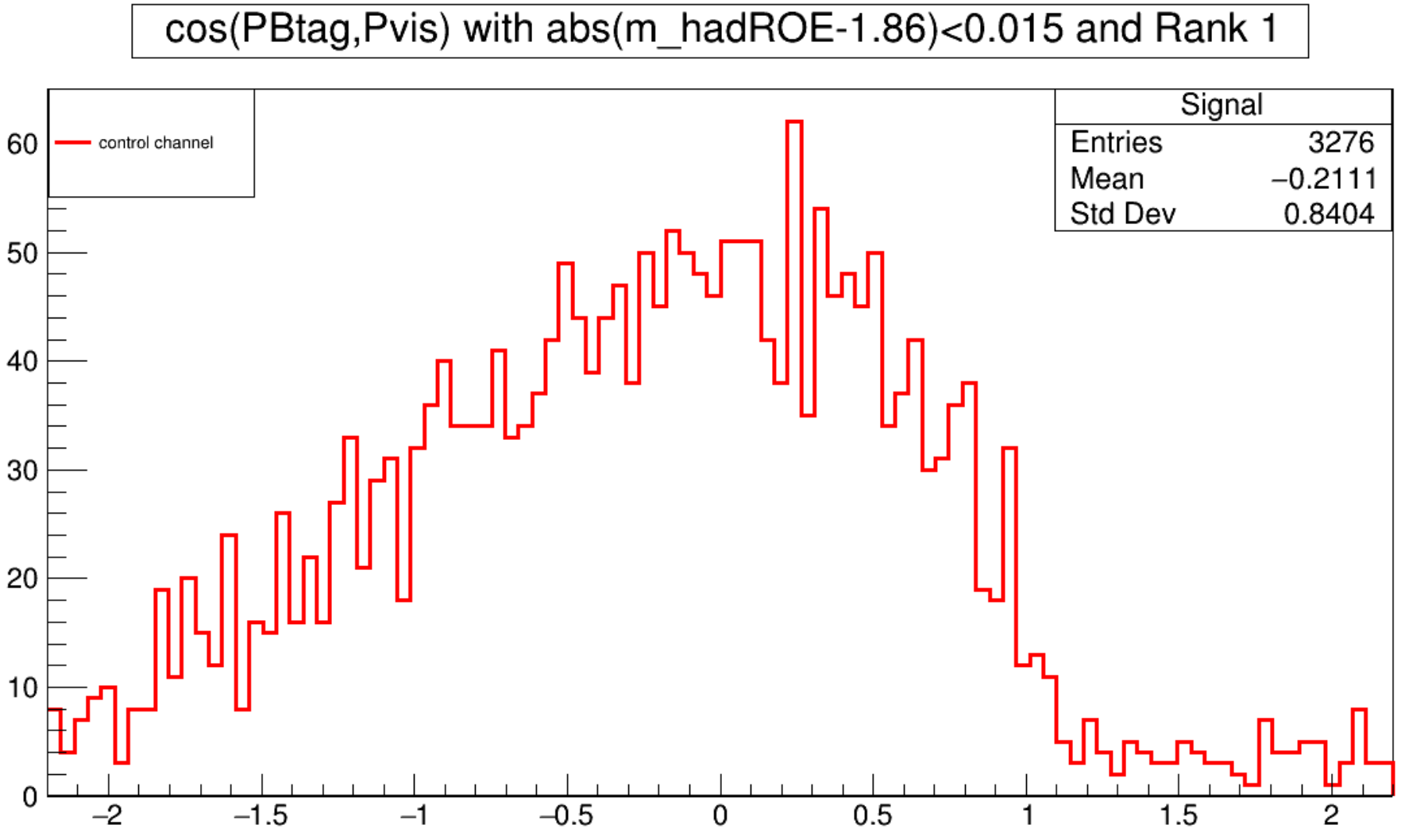
- Considered the missing momentum as the momentum of the missing lepton.

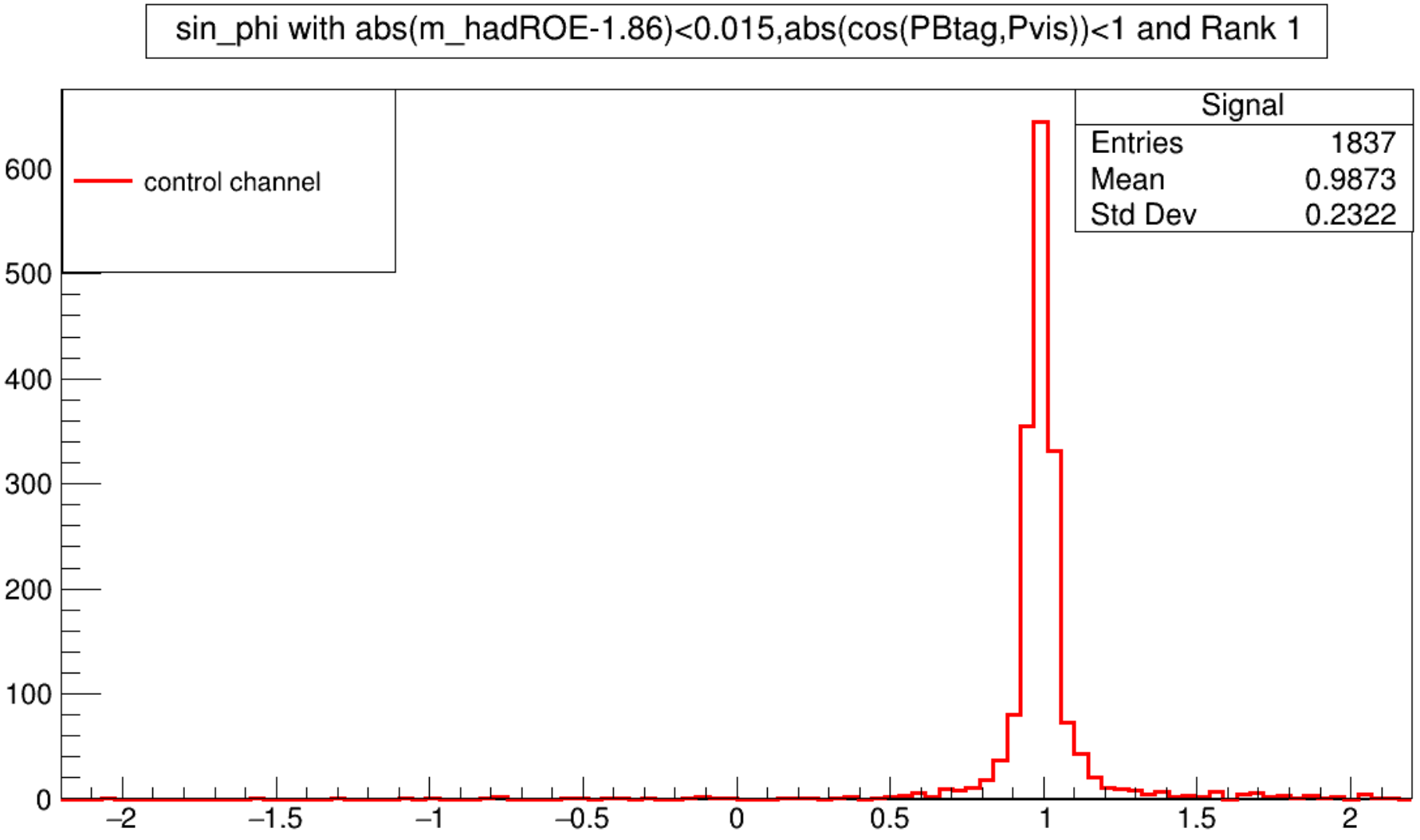
Cuts in the reconstruction program

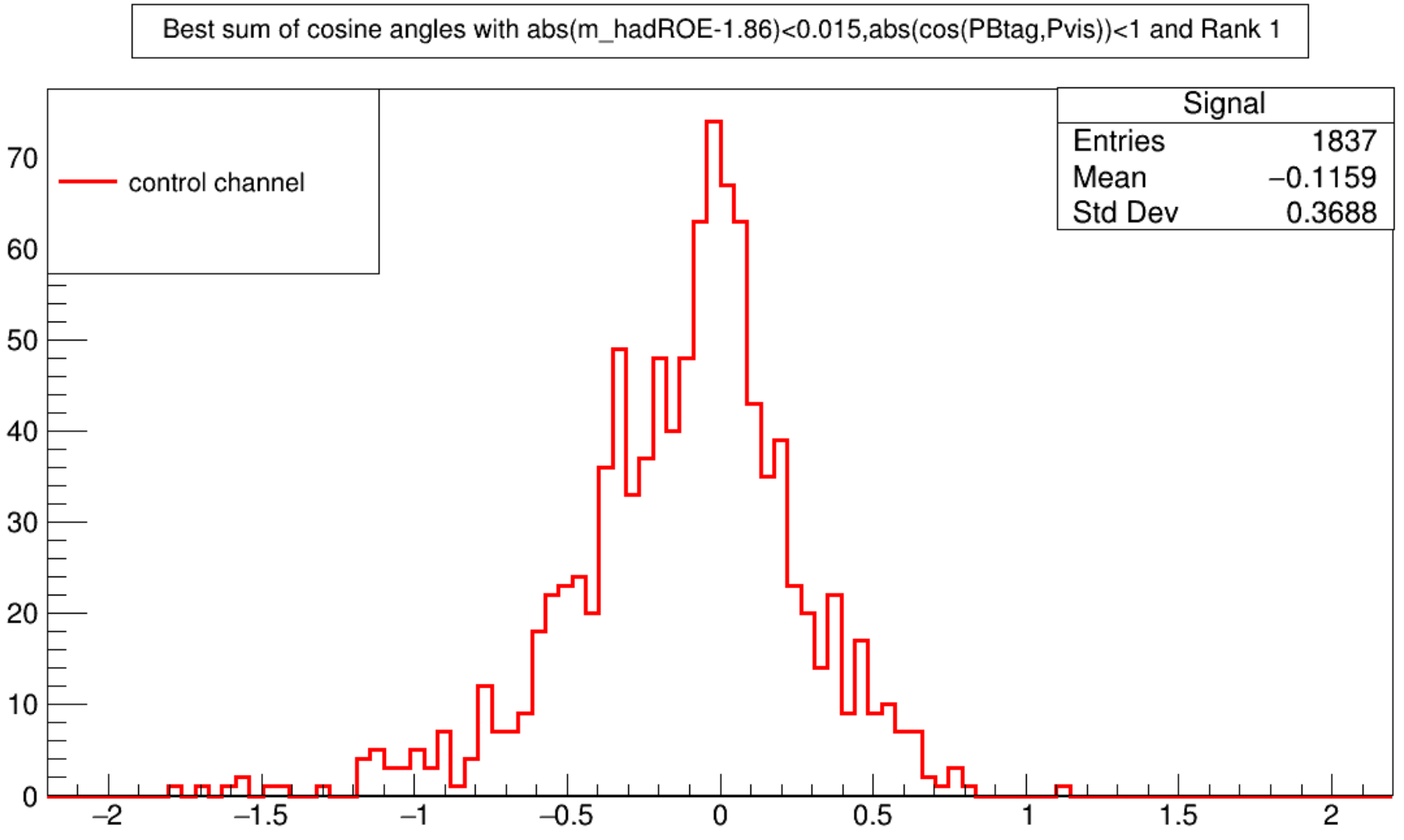
- MVA photon cuts

- $1.6 < m_{hadROE} < 2.4$ GeV

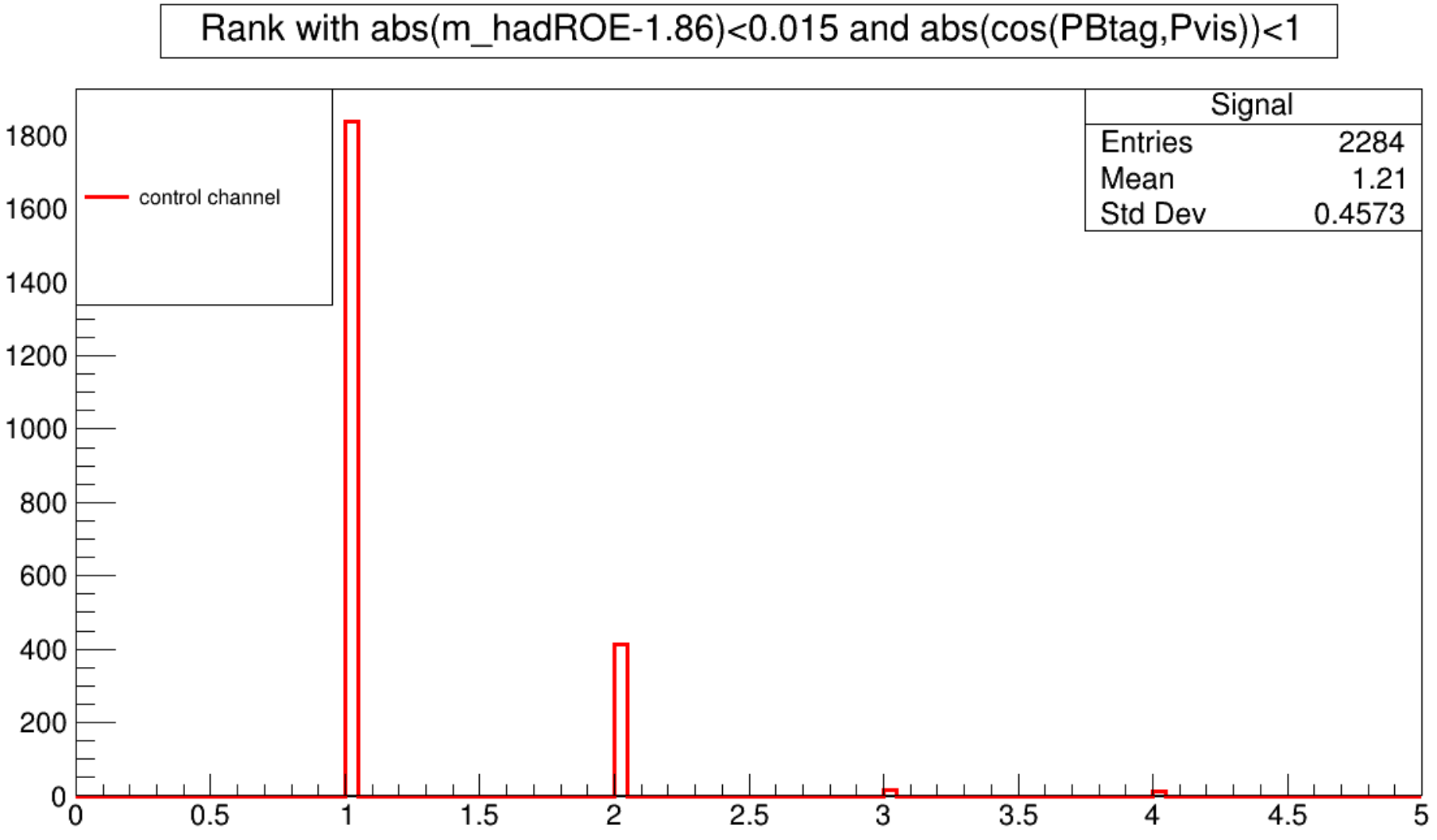

m_hadROE with abs(cos(PBtag,Pvis))<1 and Rank 1
control channel
Signal
Entries 14062
Mean 1.939
Std Dev 0.1951
700
600
500
400
300
200
100
0
1.6
1.7
1.8
1.9
2
2.1
2.2
2.3
2.4


cos(PBtag,Pvis) with abs(m_hadROE-1.86)<0.015 and Rank 1
control channel
Signal
Entries 3276
Mean −0.2111
Std Dev 0.8404
60
50
40
30
20
10
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2


sin_phi with abs(m_hadROE-1.86)<0.015,abs(cos(PBtag,Pvis))<1 and Rank 1
control channel
Signal
Entries 1837
Mean 0.9873
Std Dev 0.2322
600
500
400
300
200
100
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2


Best sum of cosine angles with abs(m_hadROE-1.86)<0.015,abs(cos(PBtag,Pvis))<1 and Rank 1
control channel
Signal
Entries 1837
Mean −0.1159
Std Dev 0.3688
70
60
50
40
30
20
10
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2

Backup


Rank with abs(m_hadROE-1.86)<0.015 and abs(cos(PBtag,Pvis))<1
control channel
Signal
Entries 2284
Mean 1.21
Std Dev 0.4573
1800
1600
1400
1200
1000
800
600
400
200
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5