Control channels update

Control channel 1 (1.0 M events)

$B^+ \rightarrow$ J/Psi K^+
 J/Psi $\rightarrow$ mu$^+$ mu$^-$

Control channel 2 (~880K events)
$B^+ \rightarrow$ Psi(2S) K^+
 Psi(2S) $\rightarrow$ mu$^+$ mu$^-$

27 Feb. 2024

Last meeting comments

- Comparison of m_hadROE for both control channel modes.

- DeltaE_Bsig plots without sin_phi cut.

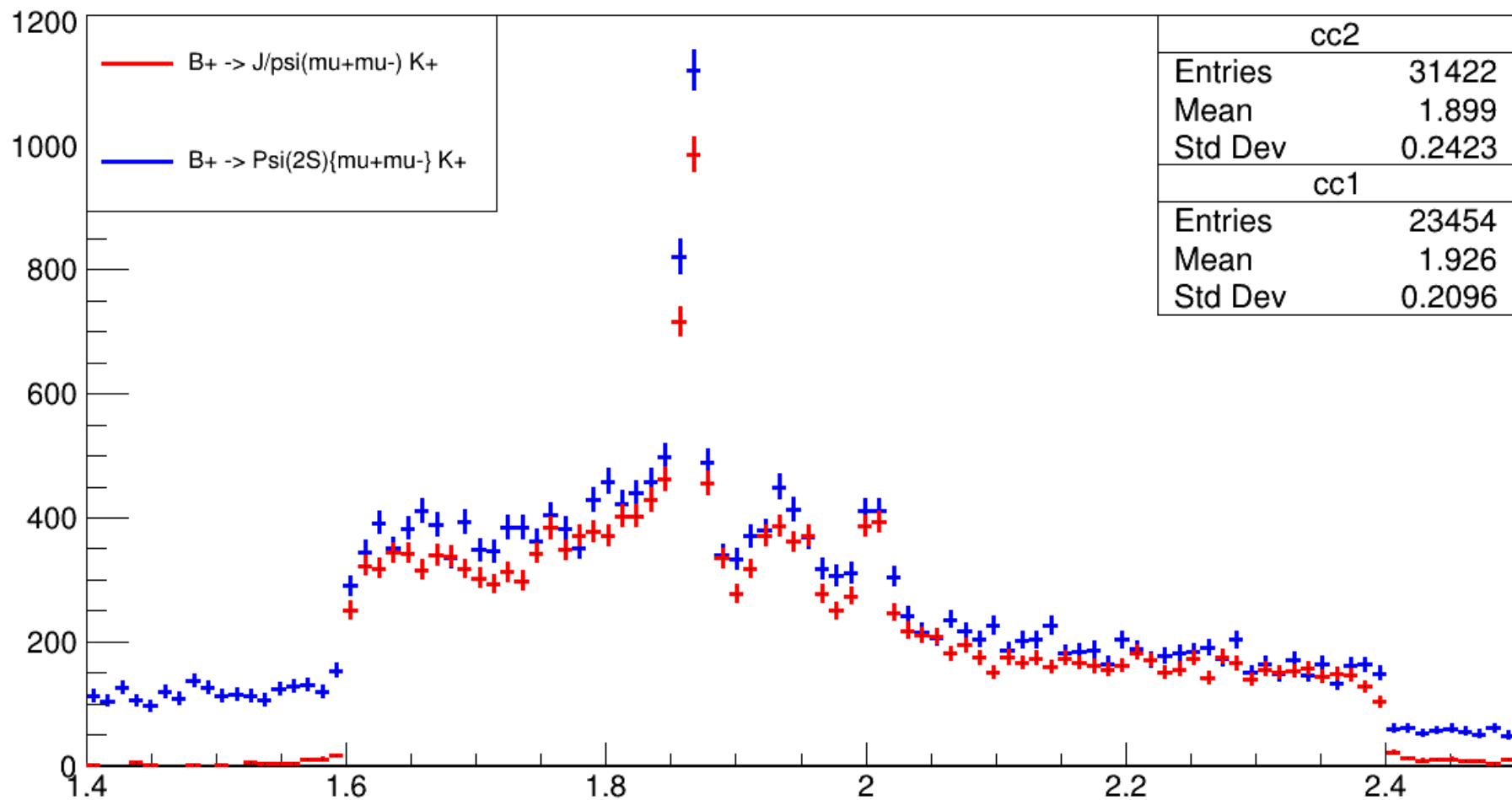# Cuts in the reconstruction program

- MVA photon cuts

- $1.3 < m_{hadROE} < 5.3$ GeV (for second control channel)
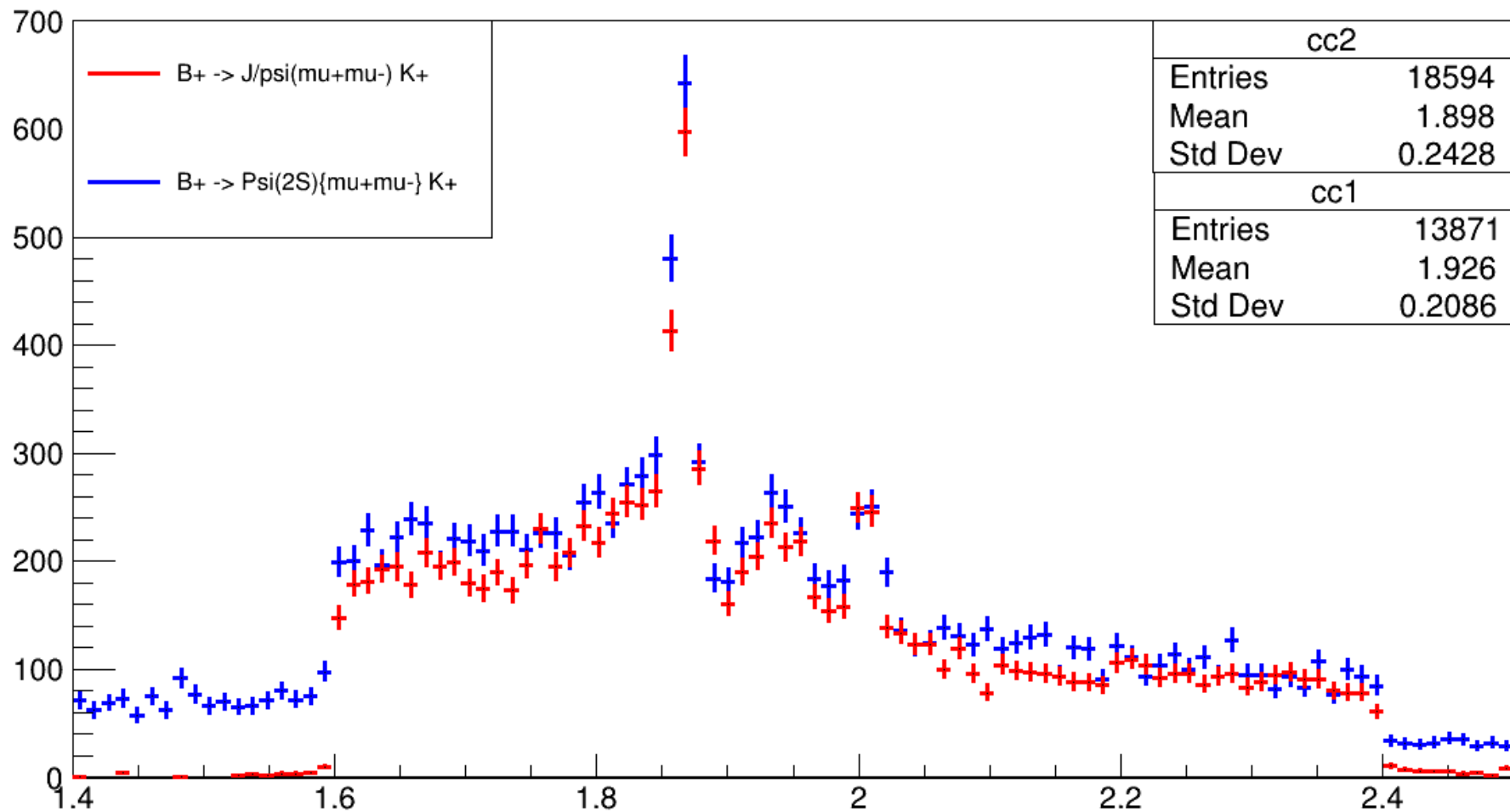
- $1.6 < m_{hadROE} < 2.4$ GeV (for first control channel)

Signal side cuts (root level)

- All applied cuts are mentioned in the title of the plots.

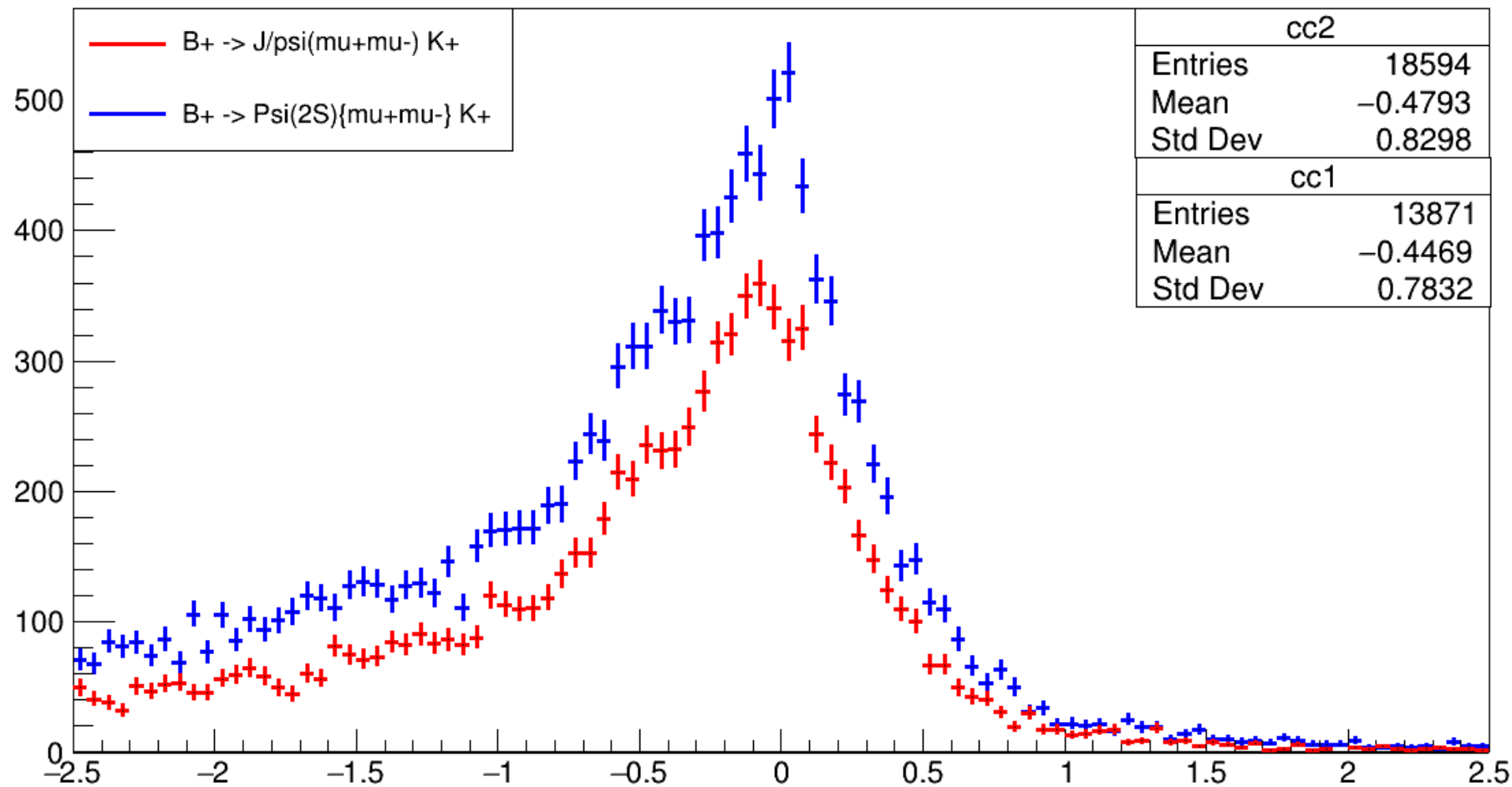m_hadROE with Mbc_Bsig>5.27,-0.050 < deltaE_Bsig < 0.050 and Rank 1

cc2	
Entries	31422
Mean	1.899
Std Dev	0.2423
cc1	
Entries	23454
Mean	1.926
Std Dev	0.2096

B+ -> J/psi(mu+mu-) K+

B+ -> Psi(2S){mu+mu-} K+

m_hadROE with Mbc_Bsig>5.27,-0.050 < deltaE_Bsig < 0.050,abs(sin_phi)<1 and Rank 1

Legend:
- B+ -> J/psi(mu+mu-) K+ (red)
- B+ -> Psi(2S){mu+mu-} K+ (blue)

cc2	
Entries	18594
Mean	1.898
Std Dev	0.2428
cc1	
Entries	13871
Mean	1.926
Std Dev	0.2086

Best sum of cosine angles with Mbc_Bsig>5.27,-0.050 < deltaE_Bsig < 0.050,abs(sin_phi)<1 and Rank 1

cc2	
Entries	18594
Mean	−0.4793
Std Dev	0.8298
cc1	
Entries	13871
Mean	−0.4469
Std Dev	0.7832

B+ -> J/psi(mu+mu-) K+

B+ -> Psi(2S){mu+mu-} K+

Best sum of cosine angles with Mbc_Bsig>5.27,-0.050 < deltaE_Bsig < 0.050 and Rank 1

Legend:
- B+ -> J/psi(mu+mu-) K+ (red)
- B+ -> Psi(2S){mu+mu-} K+ (blue)

cc2	
Entries	31422
Mean	−0.4793
Std Dev	0.8298

cc1	
Entries	23454
Mean	−0.4469
Std Dev	0.7832
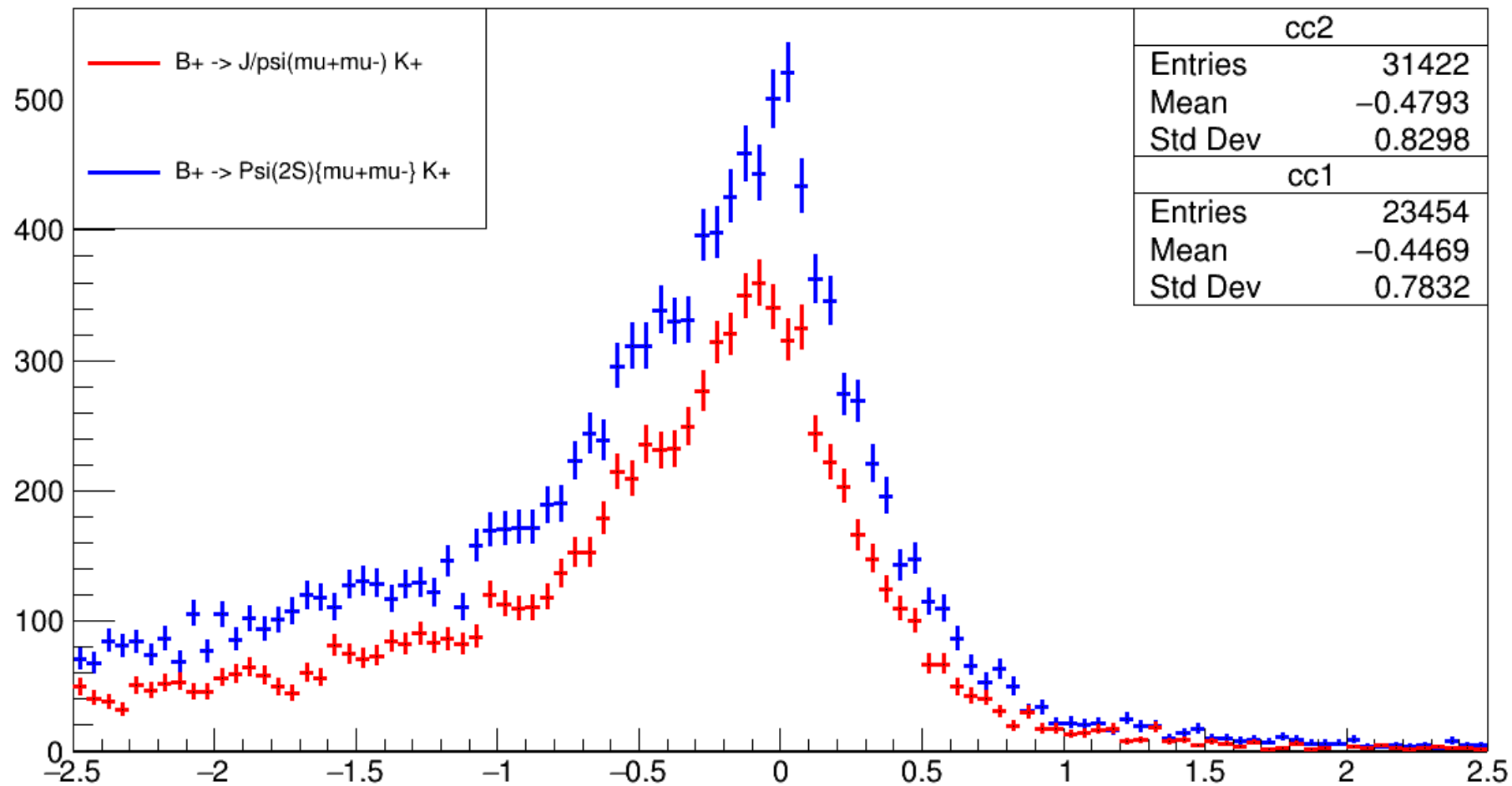
deltaE_Bsig with Mbc_Bsig>5.27 and rank 1

B+ -> Psi(2S){mu+mu-} K+

Signal	
Entries	34088
Mean	−0.003916
Std Dev	0.02961

deltaE_Bsig with rank 1

Legend: B+ -> Psi(2S){mu+mu-} K+

Signal	
Entries	62655
Mean	−0.006752
Std Dev	0.04319
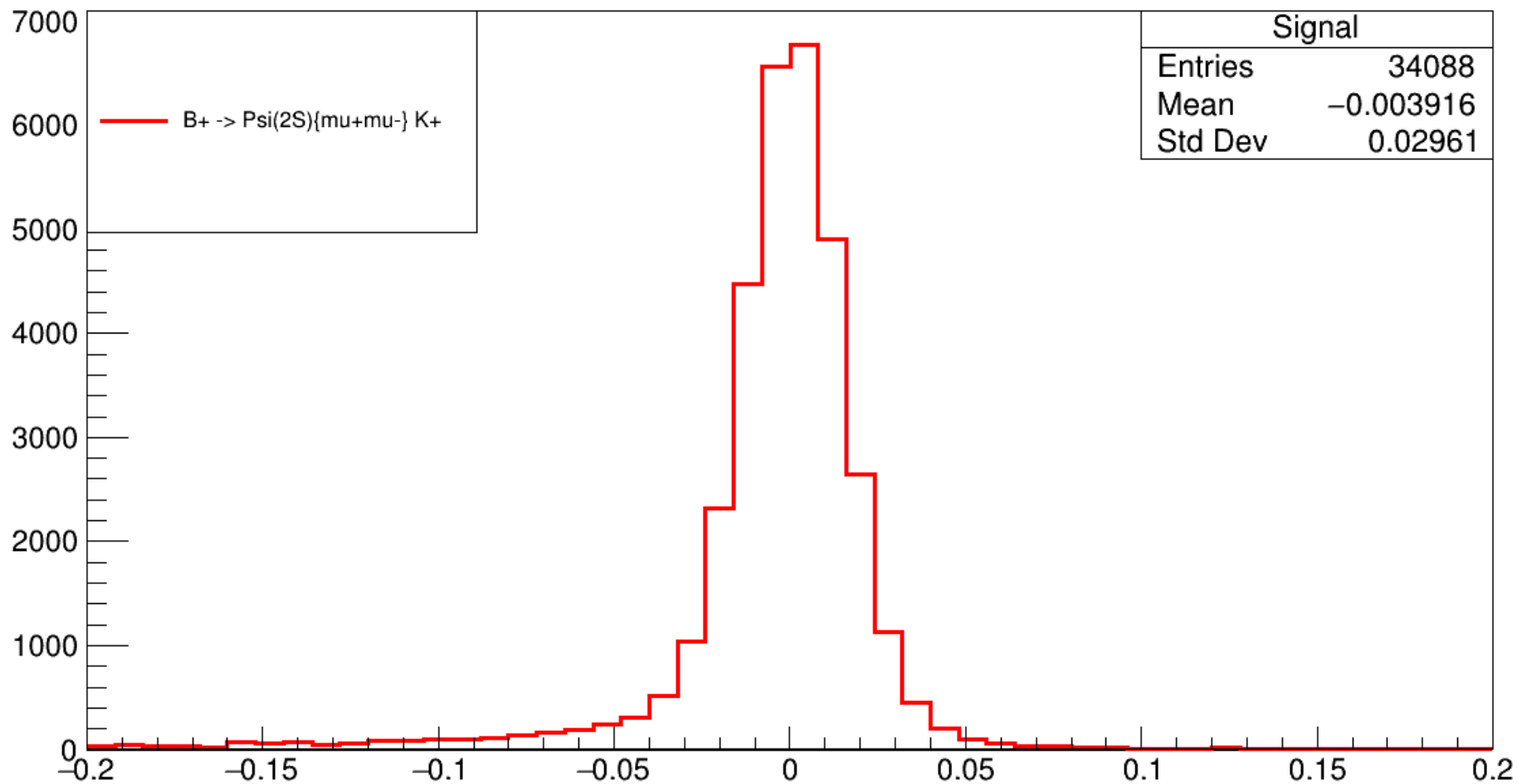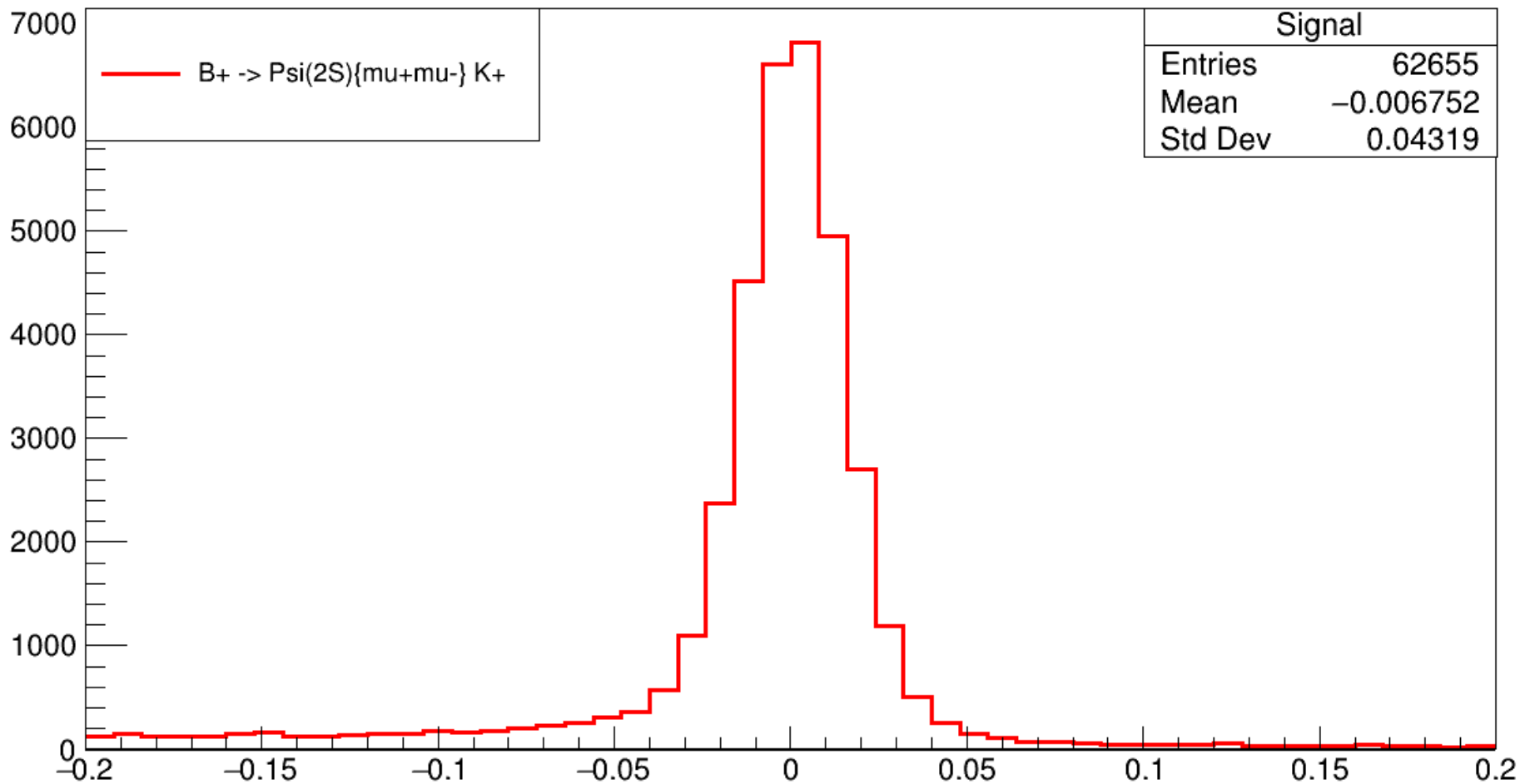
deltaE_Bsig with Mbc_Bsig>5.27,abs(sin_phi)<1 and rank 1

Legend: B+ -> Psi(2S){mu+mu-} K+

Signal	
Entries	18946
Mean	0.009336
Std Dev	0.009591