

Second control channel update

$B^+ \rightarrow \text{Psi}(2S) K^+$

$\text{Psi}(2S) \rightarrow \mu^+ \mu^-$

$B^- \rightarrow \text{generic}$

~880,000 events

22 Feb. 2024

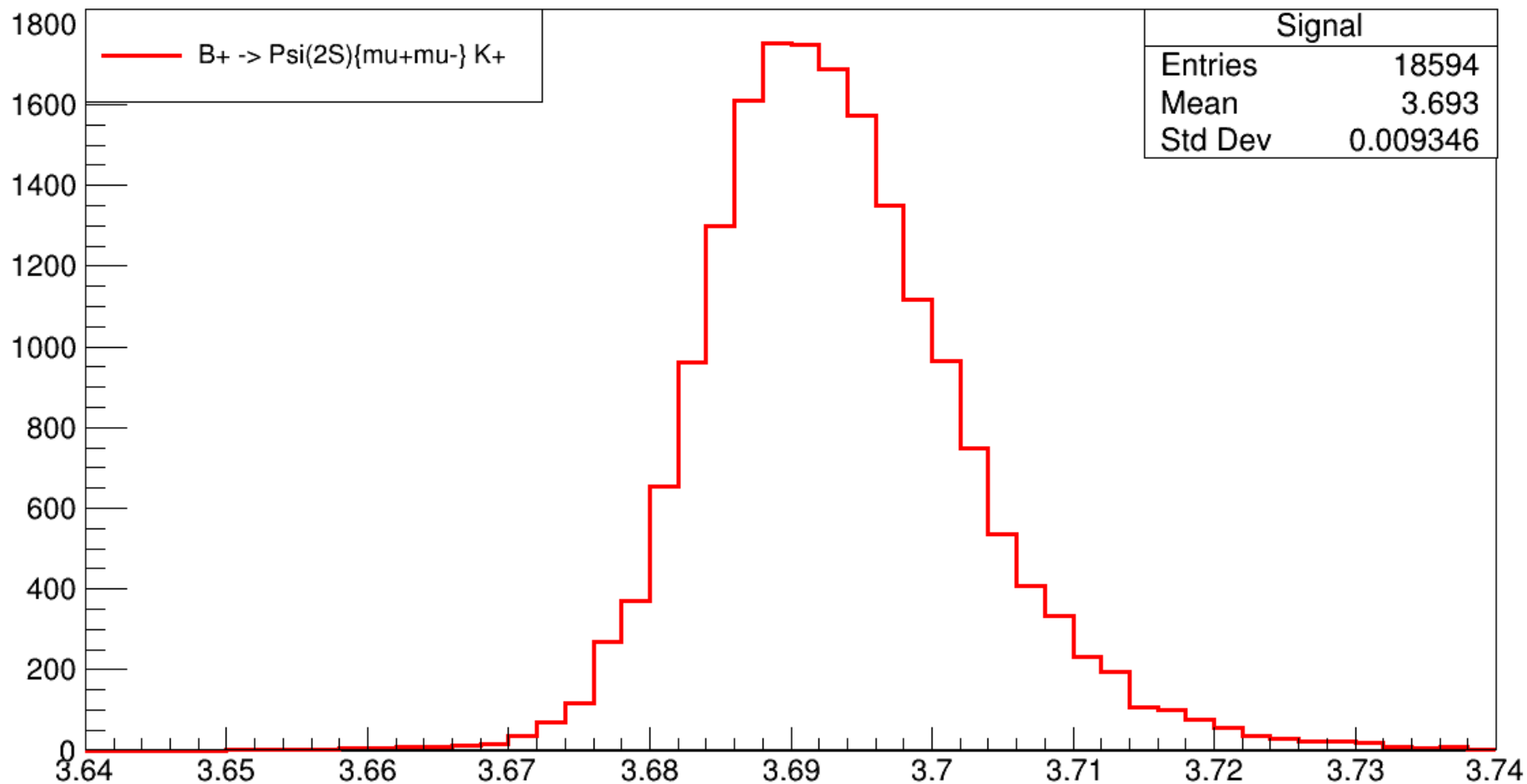
Cuts in the reconstruction program

- MVA photon cuts
- $1.3 < m_{\text{hadROE}} < 5.3 \text{ GeV}$

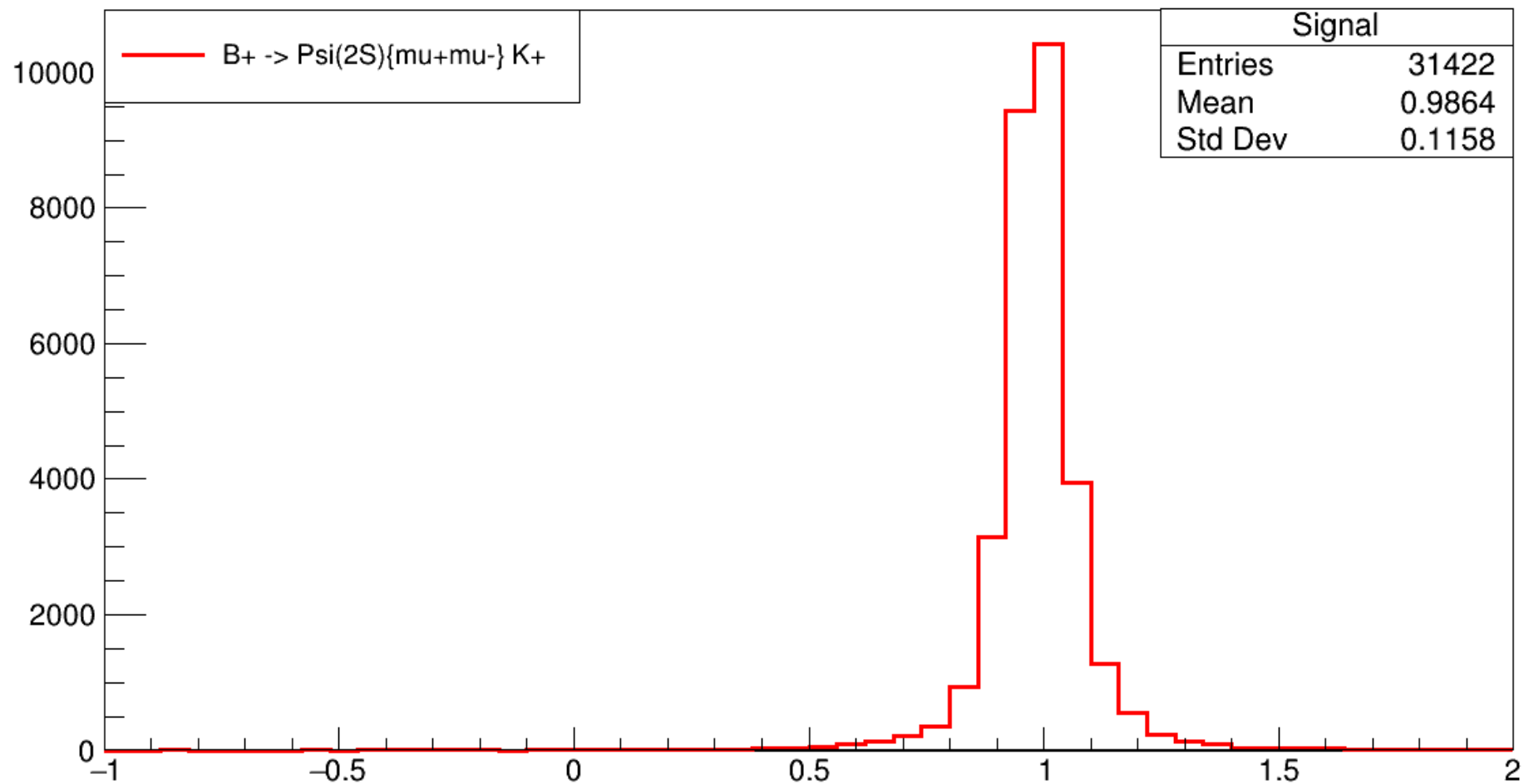
Signal side cuts (root level)

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

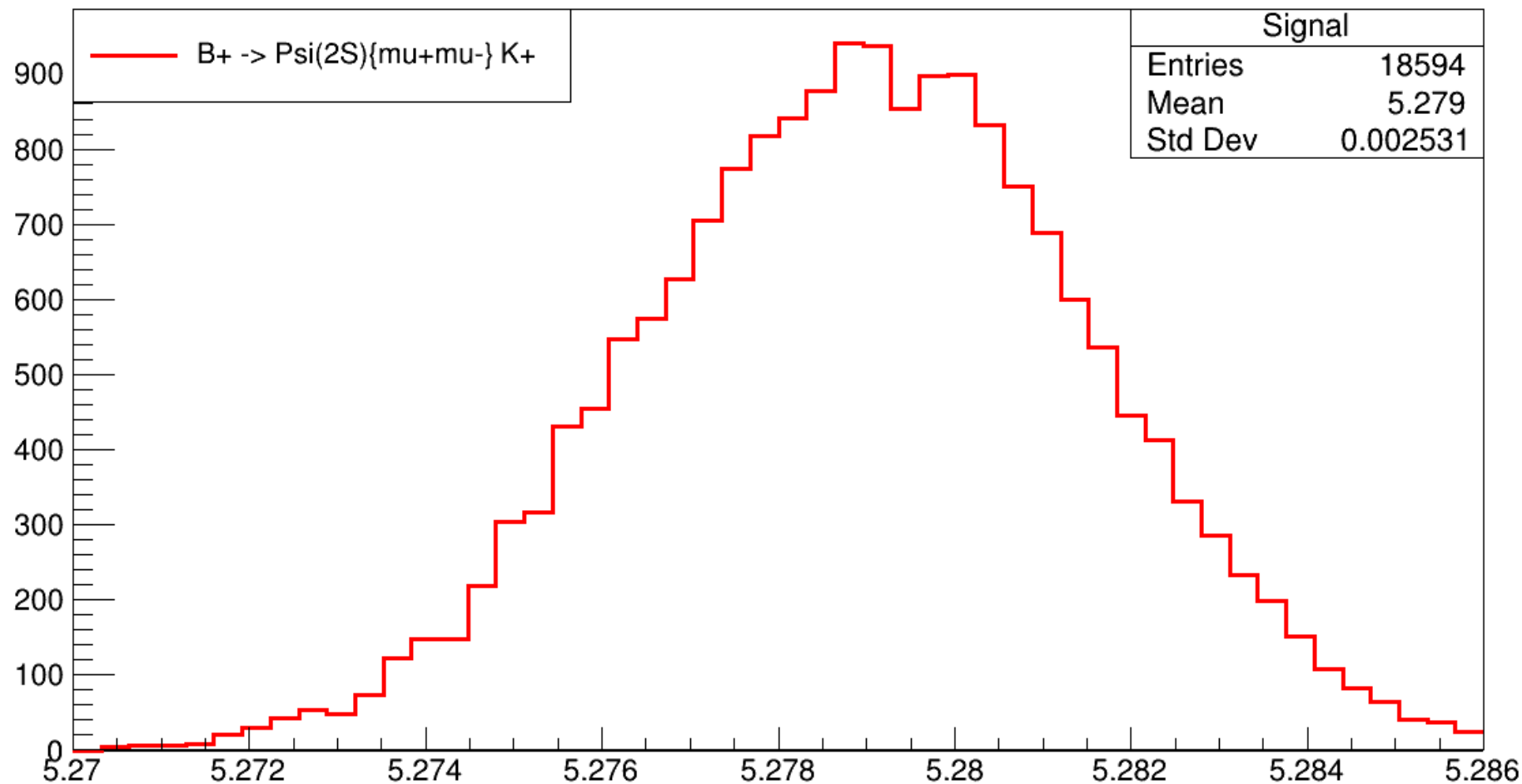
m_Psi(2) with with Mbc_Bsig>5.27,-0.050<deltaE_Bsig<0.050,abs(sin_phi)<1 and rank 1



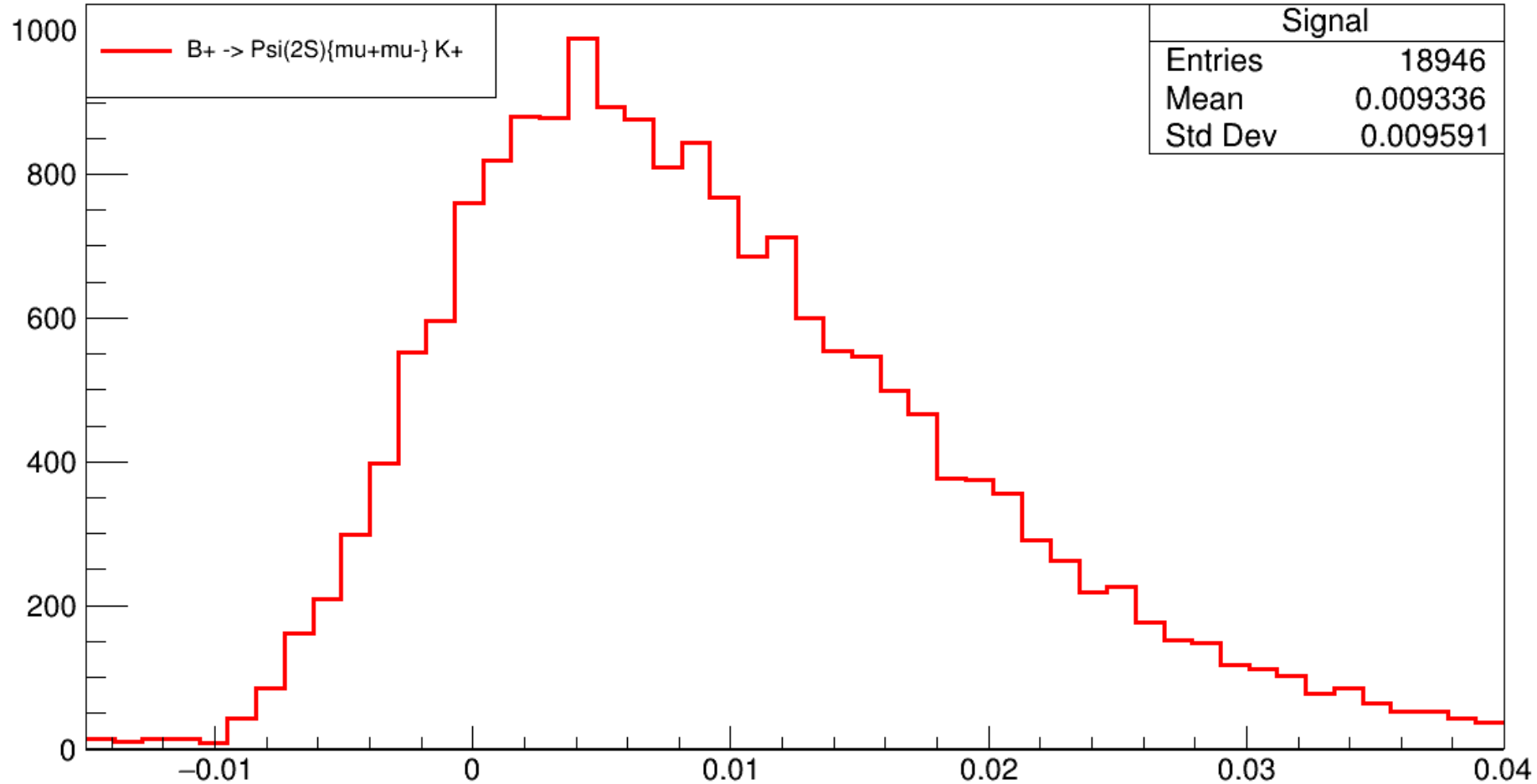
sin_phi with with Mbc_Bsig>5.27,-0.050<deltaE_Bsig<0.050 and rank 1



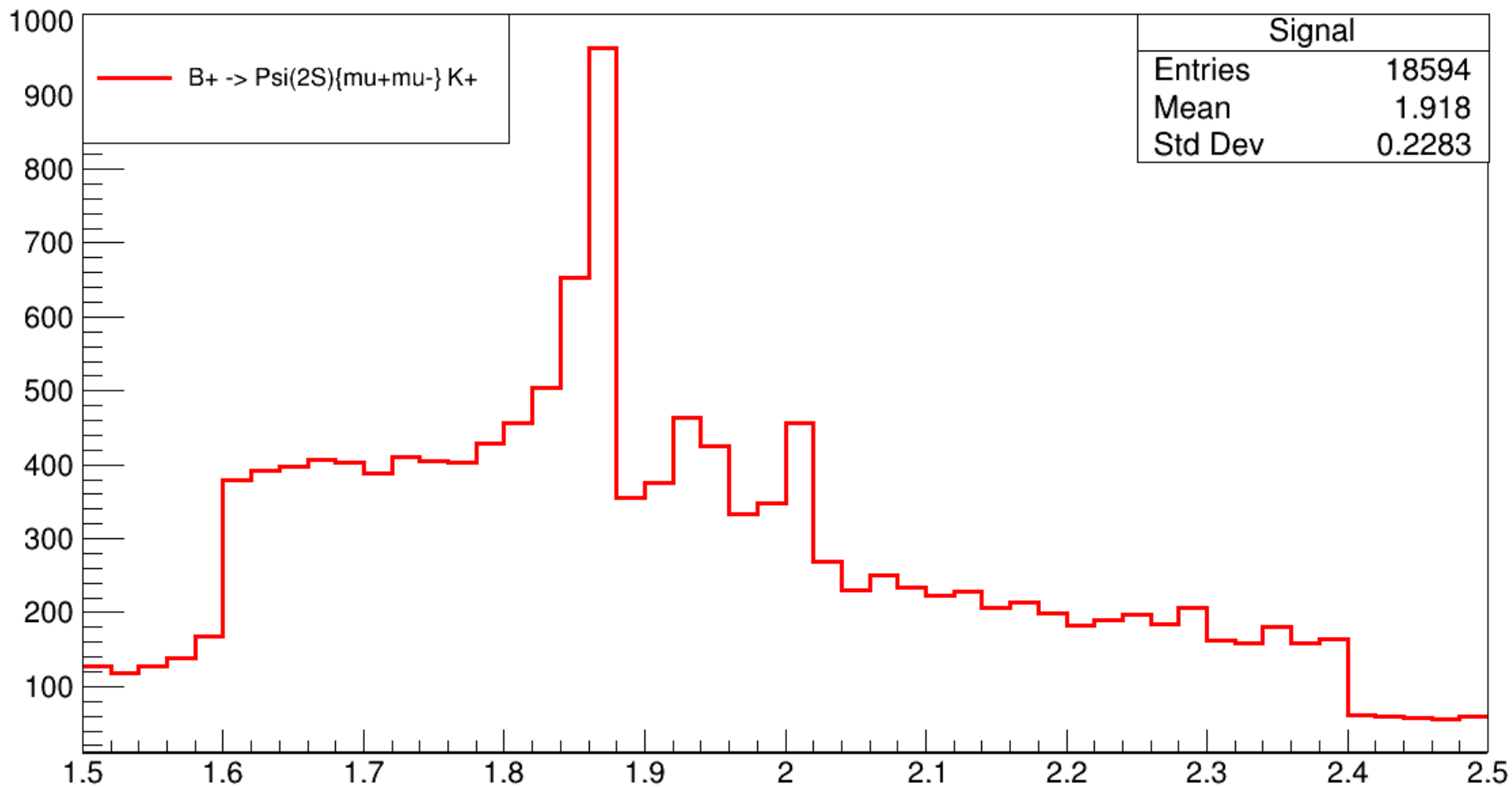
Mbc_Bsig with $-0.050 < \Delta E_{\text{Bsig}} < 0.050$, $|\sin \phi| < 1$ and rank 1



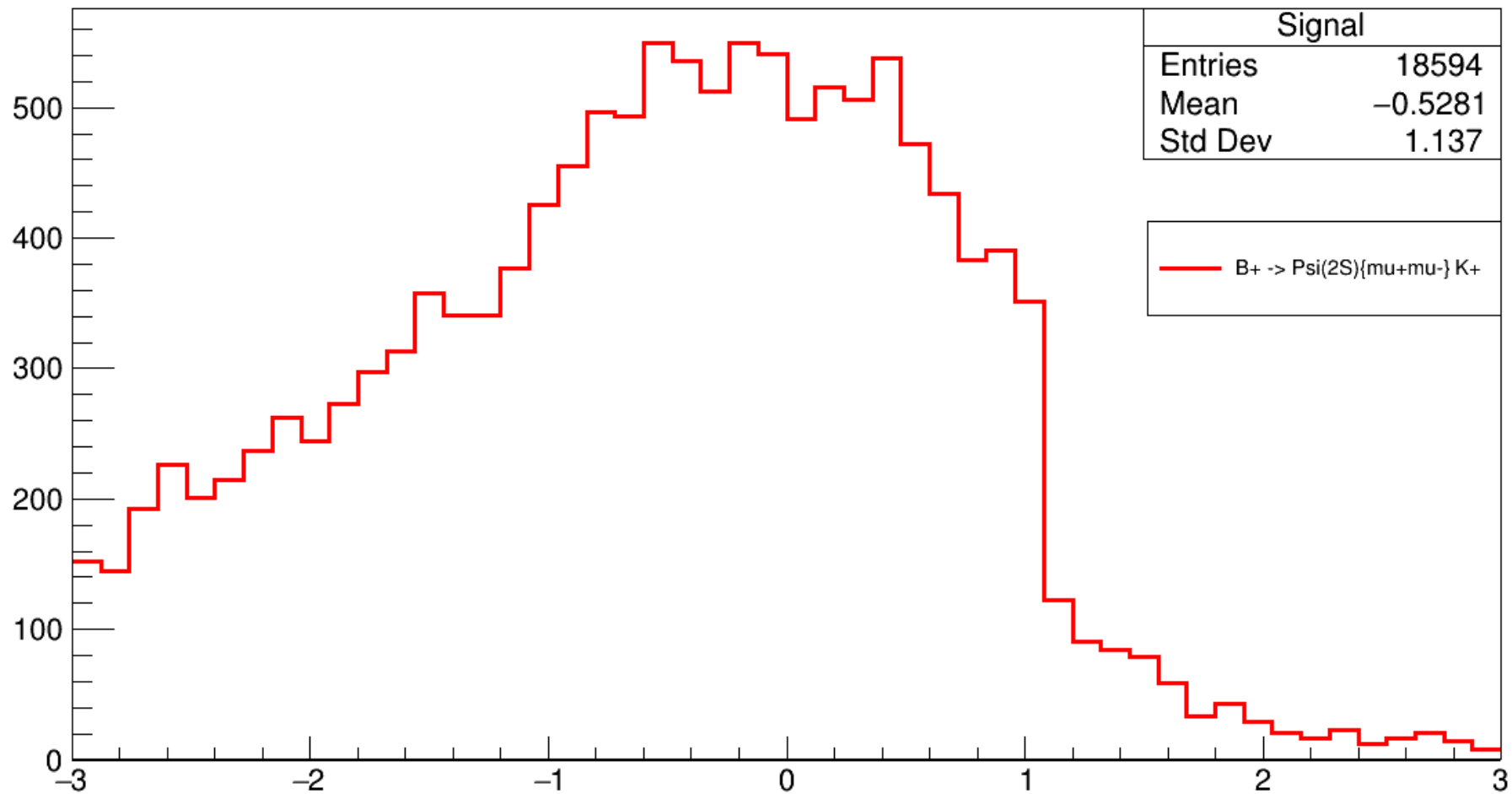
deltaE_Bsig with Mbc_Bsig>5.27,abs(sin_phi)<1 and rank 1



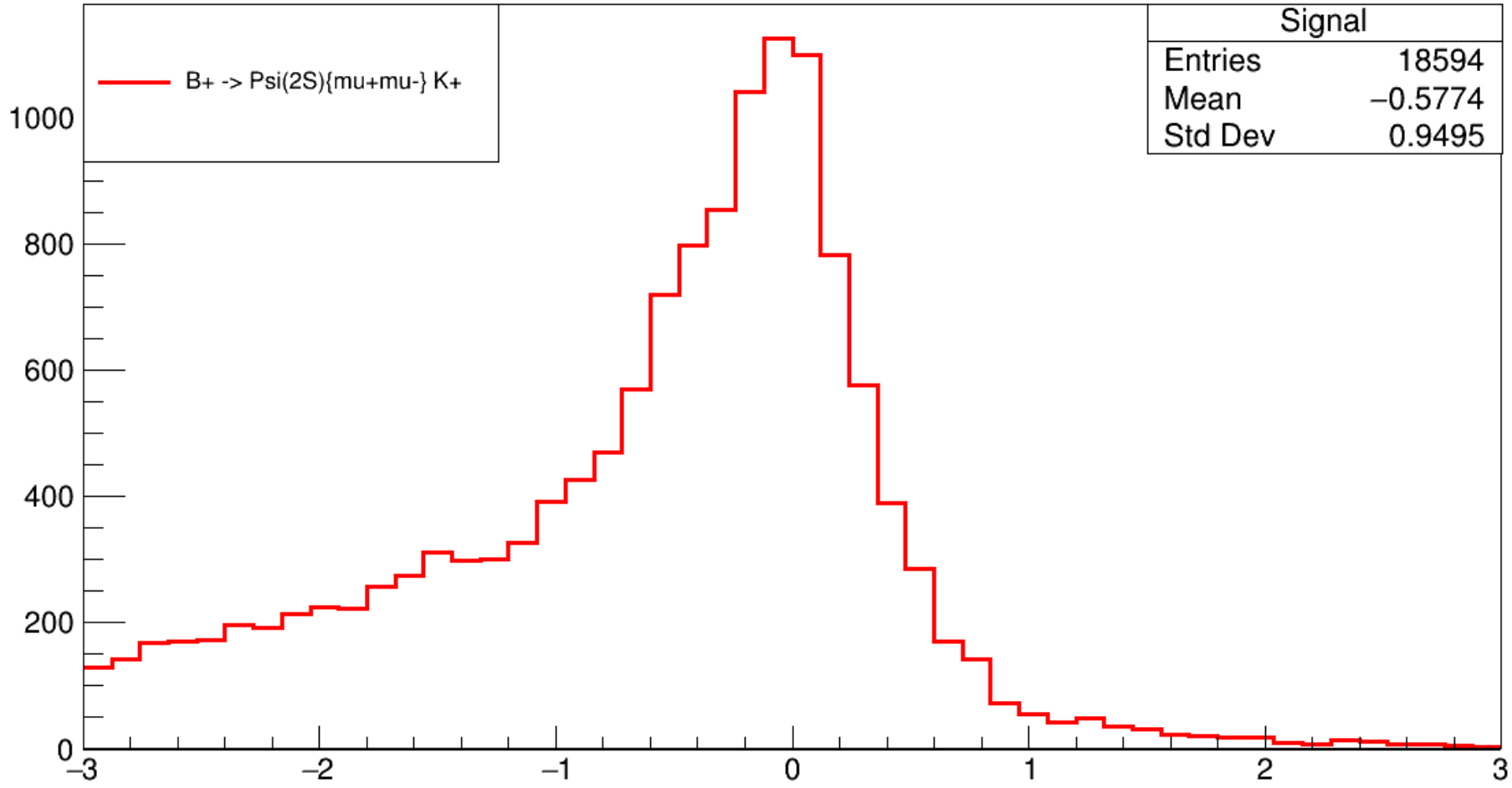
m_hadROE with with Mbc_Bsig>5.27,-0.050<deltaE_Bsig<0.050,abs(sin_phi)<1 and rank 1



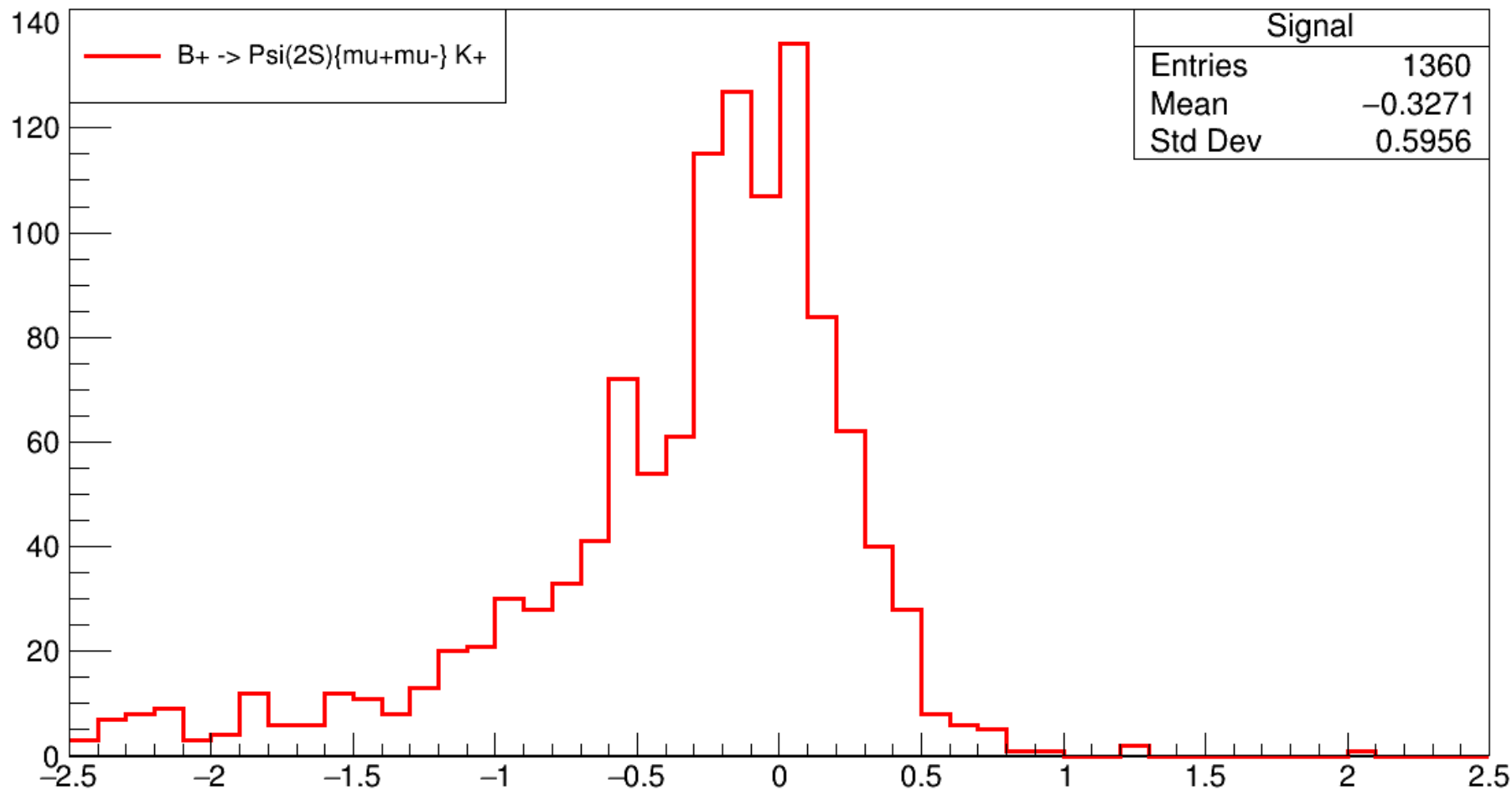
cos(PBtag,Pvistag) with with Mbc_Bsig>5.27,-0.050<deltaE_Bsig<0.050,abs(sin_phi)<1 and rank 1



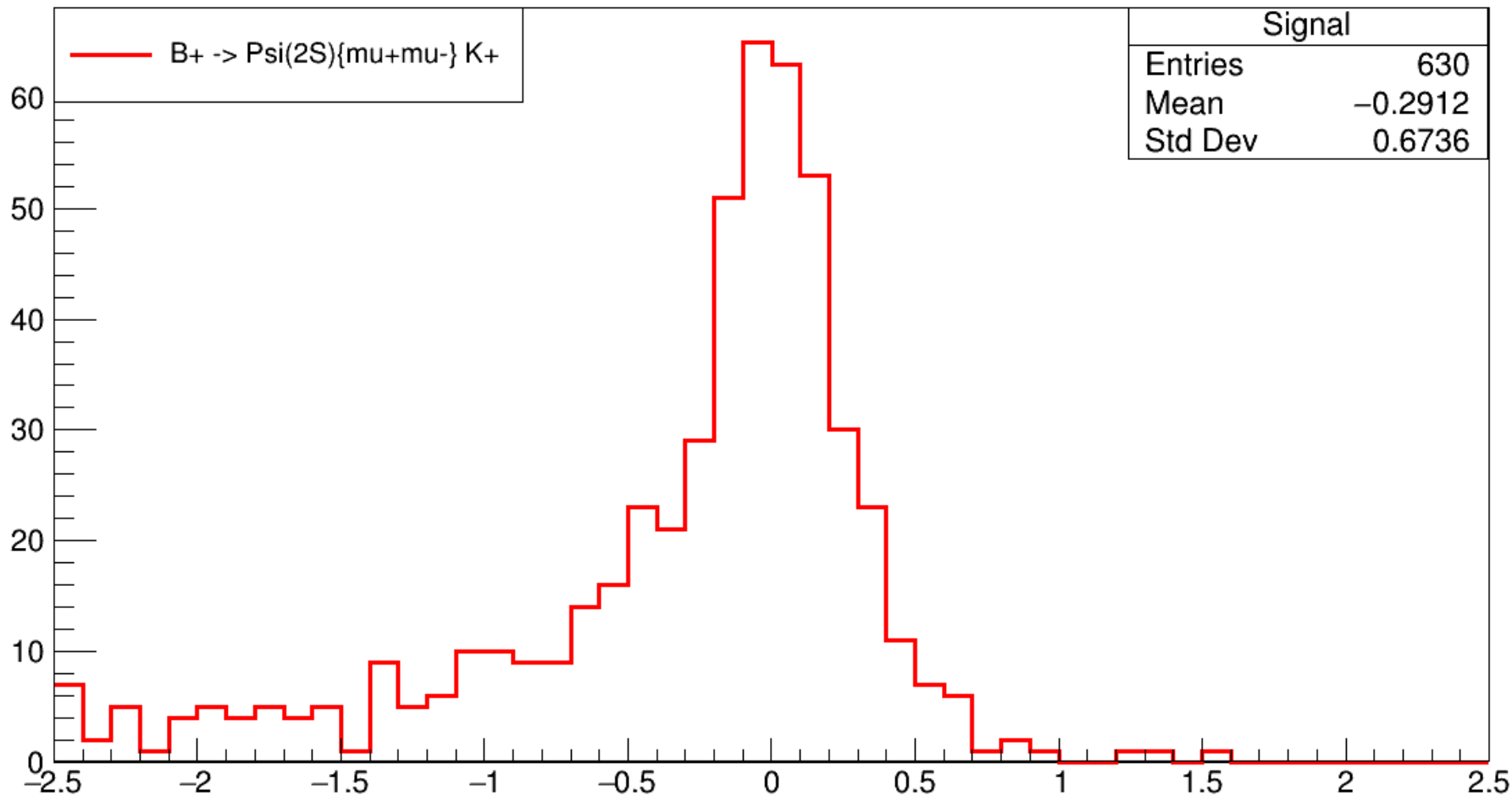
Best sum of cosine angles with with $M_{bc_Bsig} > 5.27, -0.050 < \Delta E_{Bsig} < 0.050, \text{abs}(\sin_{\phi}) < 1$ and rank 1



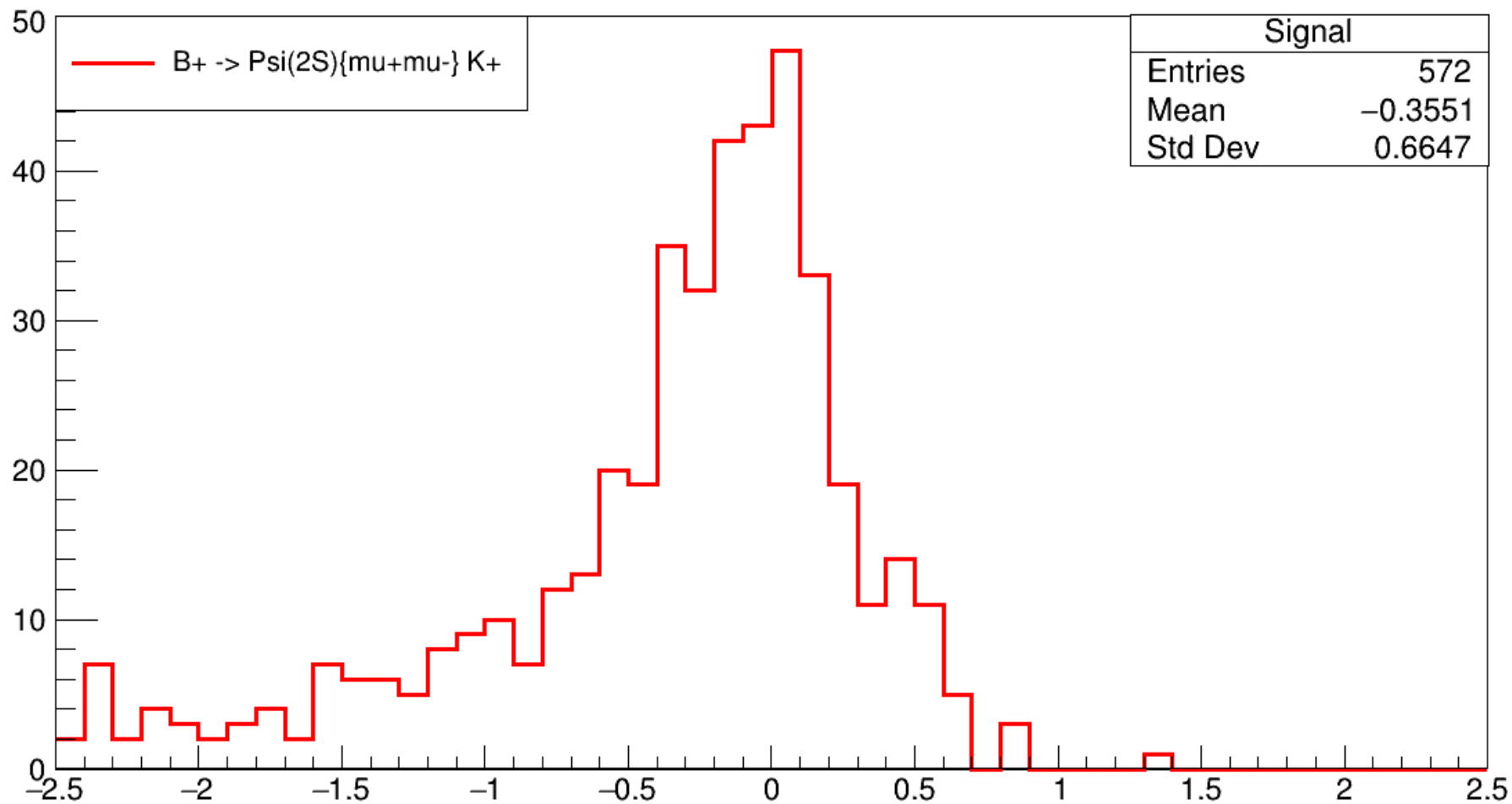
Best sum of cosine angles with $M_{bc_Bsig} > 5.27, \text{abs}(\sin_phi) < 1, -0.050 < \Delta E_{Bsig} < 0.050, \text{abs}(m_{hadROE} - 1.86) < 0.015$ and rank 1



Best sum of cosine angles with $M_{bc_Bsig} > 5.27, \text{abs}(\sin_phi) < 1, -0.050 < \Delta E_{Bsig} < 0.050, \text{abs}(m_{hadROE} - 2.006) < 0.015$ and rank 1

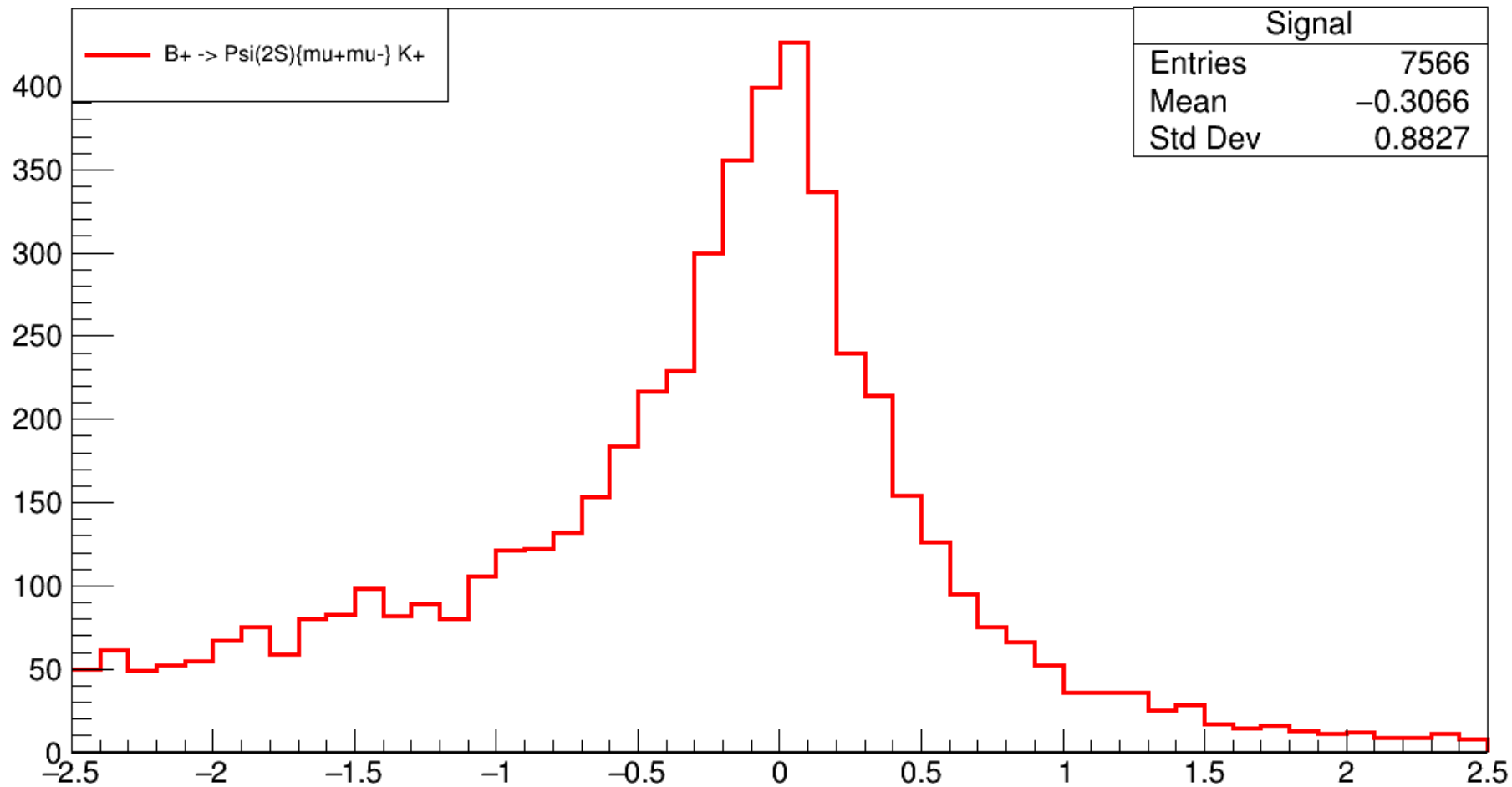


Best sum of cosine angles with $M_{bc_Bsig} > 5.27, \text{abs}(\sin_phi) < 1, -0.050 < \Delta E_{Bsig} < 0.050, \text{abs}(m_{hadROE} - 1.96) < 0.015$ and rank 1

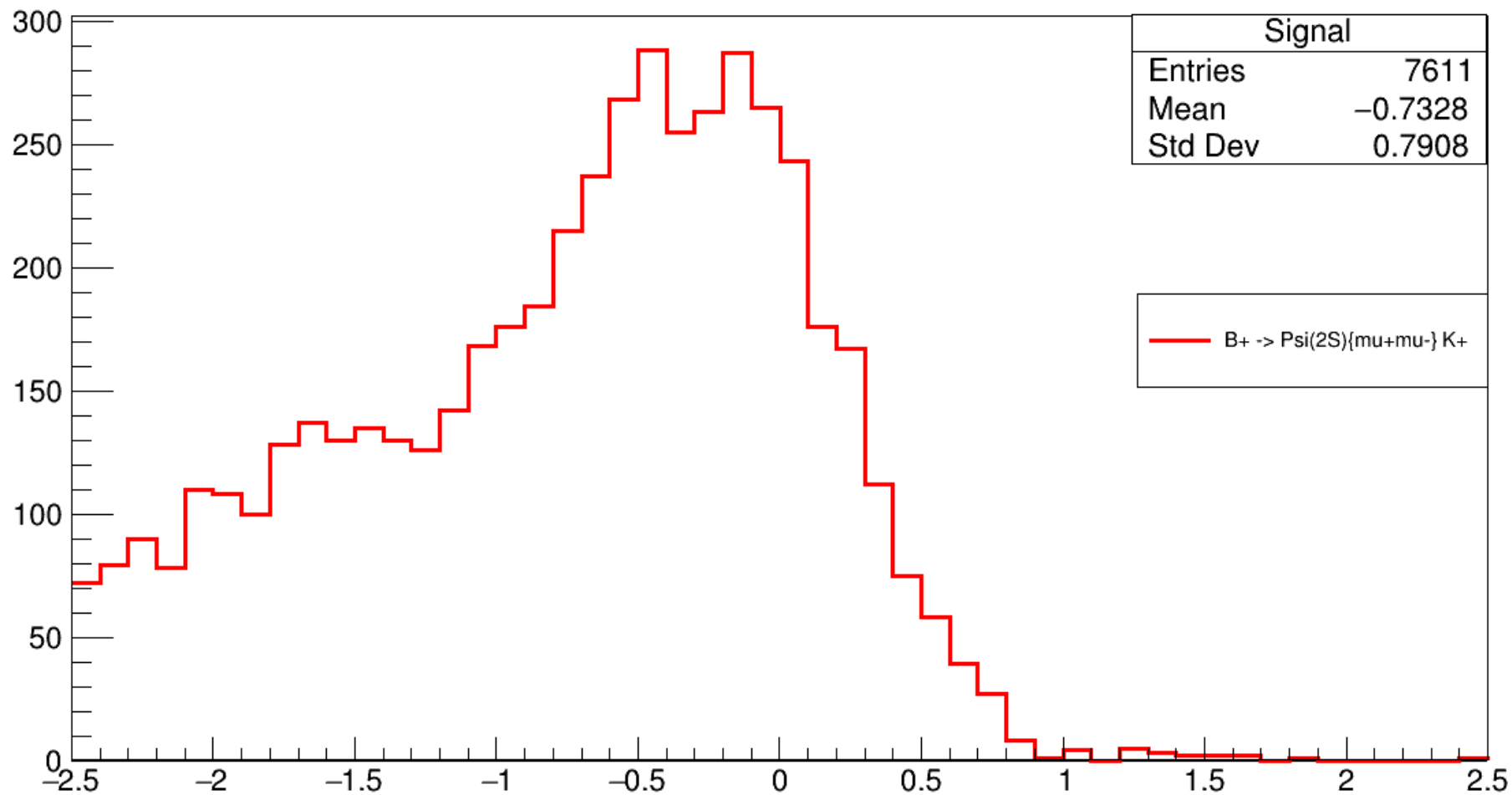


Backup

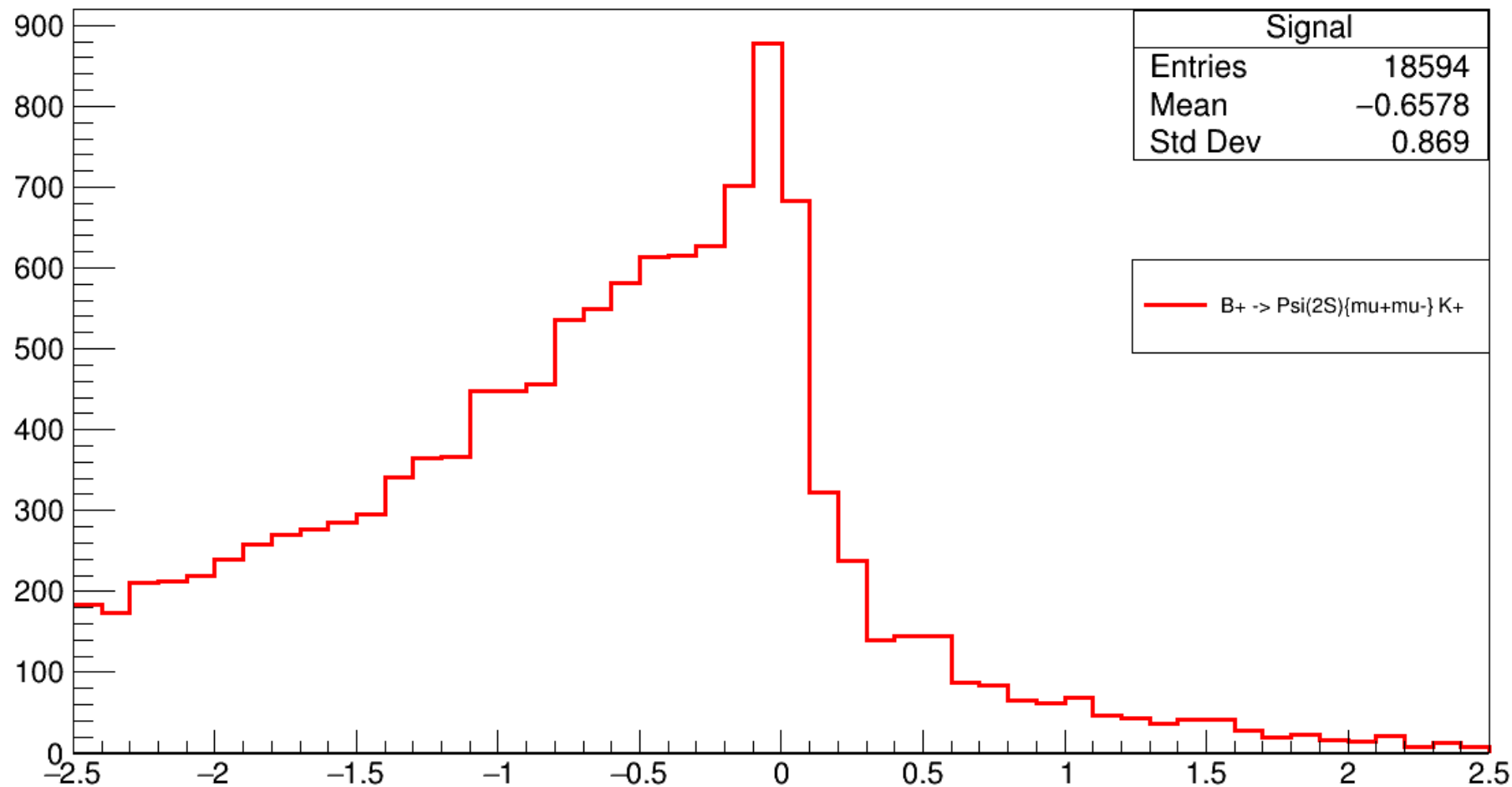
Best sum of cosine angles with $M_{bc_Bsig} > 5.27, \text{abs}(\sin_\phi) < 1, -0.050 < \Delta E_{Bsig} < 0.050, m_{hadROE} > 2.006$ and rank 1



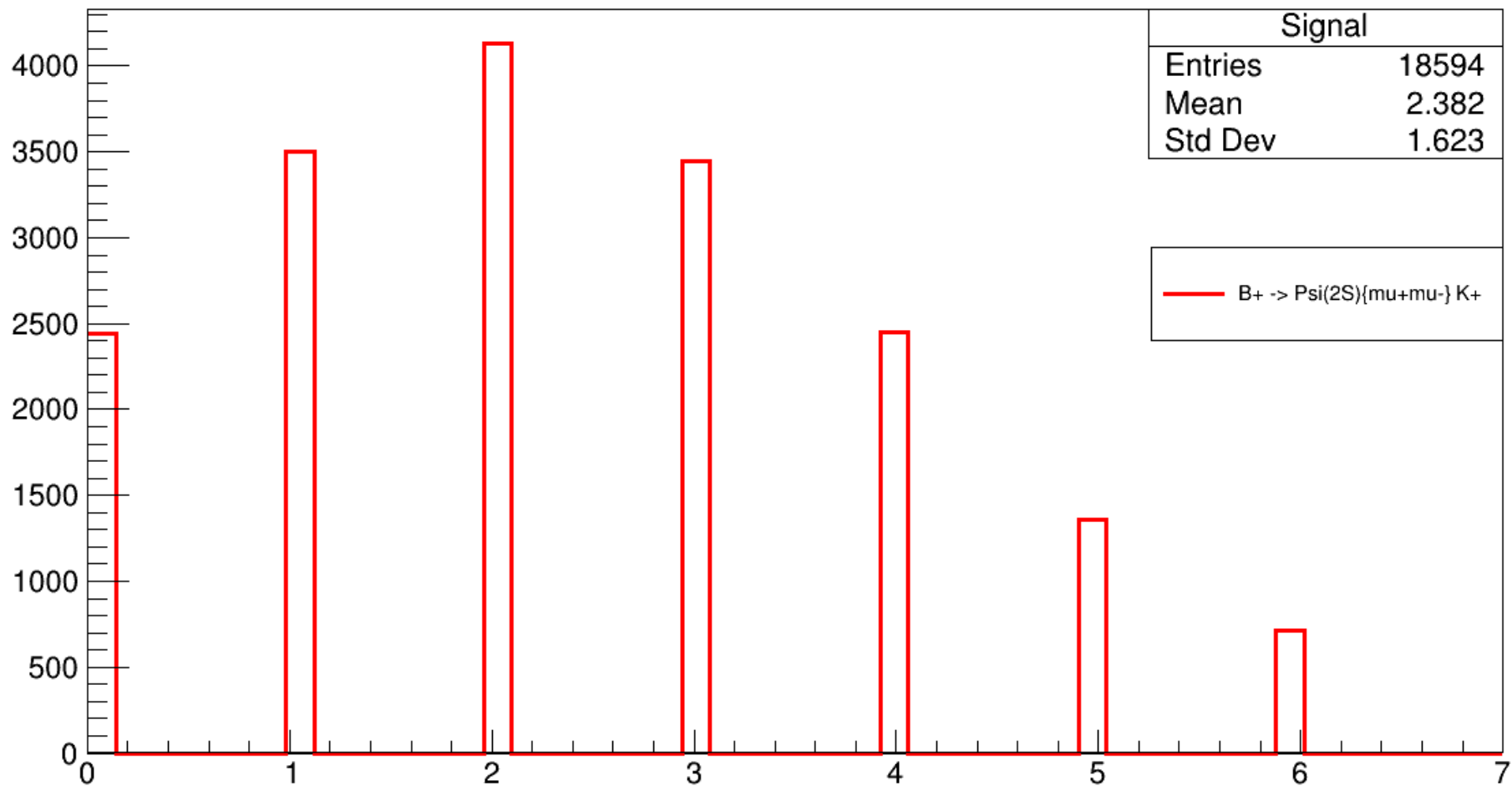
Best sum of cosine angles with $M_{bc_Bsig} > 5.27, \text{abs}(\sin_{\phi}) < 1, -0.050 < \Delta E_{Bsig} < 0.050, m_{hadROE} < 1.86$ and rank 1



Direct plot of cosine angles with $M_{bc_Bsig} > 5.27, |\sin \phi| < 1, -0.050 < \Delta E_{Bsig} < 0.050$ and rank 1



nPhotons with $M_{bc_Bsig} > 5.27, |\sin_{\phi}| < 1, -0.050 < \Delta E_{Bsig} < 0.050$ and rank 1



nLepton with $M_{bc_Bsig} > 5.27, \text{abs}(\sin_phi) < 1, -0.050 < \text{deltaE_Bsig} < 0.050$ and rank 1

