

Group meeting

2025/08/29

B2 proc16 data problems (Run1)

proc16 (2019-2023 data - exp 7-26)

- **Proc16** (exp 12 to exp 26)
 - **Status: All chunks are done.**
 - **4S**
 - **All**
 - /belle/collection/Data/proc16_4S_all_v1
 - /belle/collection/Data/proc16_4S_all_10601400_v1
 - **Hadron**
 - /belle/collection/Data/proc16_4S_had_v1
 - /belle/collection/Data/proc16_4S_had_10601300_v1
 - **4S offres** (gbasf -n 2)
 - **All**
 - /belle/collection/Data/proc16_offres_all_v1
 - /belle/collection/Data/proc16_offres_all_10601400_v1
 - **Hadron**
 - /belle/collection/Data/proc16_offres_had_v1
 - /belle/collection/Data/proc16_offres_had_10601300_v1
 - **5S scan** (gbasf -n 2)
 - **All**
 - /belle/collection/Data/proc16_5Sscan_all_v1
 - /belle/collection/Data/proc16_5Sscan_all_10601400_v1
 - **Hadron**
 - /belle/collection/Data/proc16_5Sscan_had_v1
 - /belle/collection/Data/proc16_5Sscan_had_10601300_v1

Use the upper one (in red box)
Lower one is for systematic research
e.g. 10601300 :

```
Combined systematics skim for the four hadronic channels:  
SystematicsKshort,  
SystematicsJpsi,  
SystematicsDstar,  
SystematicsLambda.
```

B2 proc16 data problems Run2

Error from payload

```
[INFO] Conditions Database: found working metadata provider
provider = http://belle2db.sdcc.bnl.gov/b2s/rest/
[INFO] Conditions data: configured globaltags (highest priority first) are data_prompt_rel08, online

[ERROR] Cannot find payload in any of the configured global tags
      name = BeamParameters
      globaltags = data_prompt_rel08, online
      experiment = 35
      run = 2041 { module: VariablesToNtuple_etac:all }
```

Reason and solution

the jobs are currently hopeless, since one or more variables meant to be used only on MC are used here on data as well, leading to the error reported below about the (expected) missing BeamParameters payload.

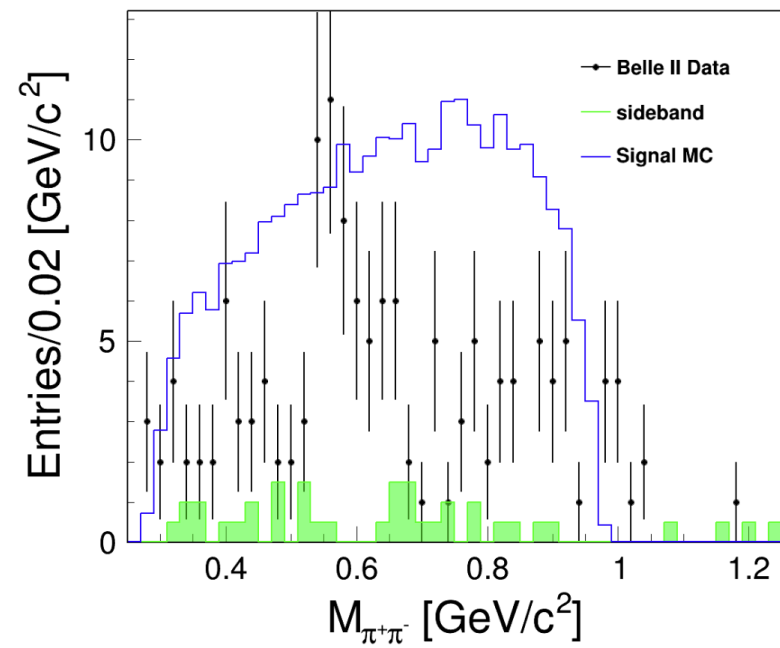
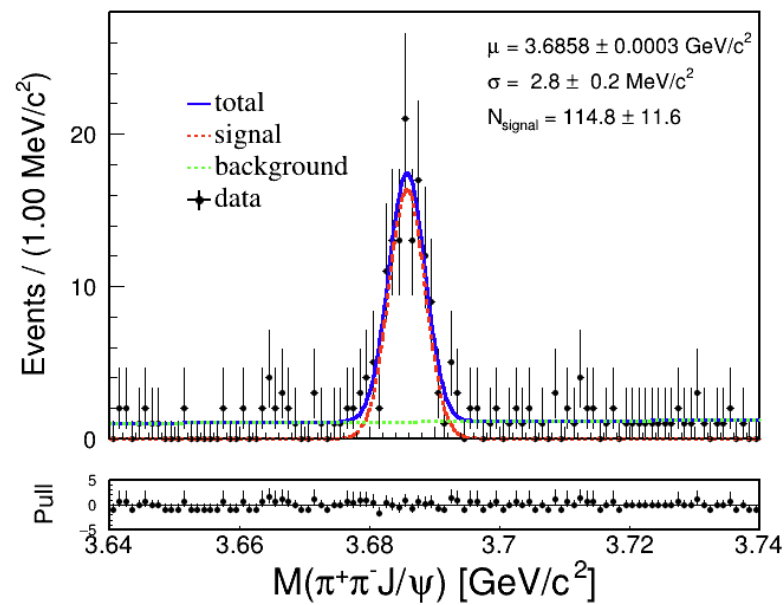
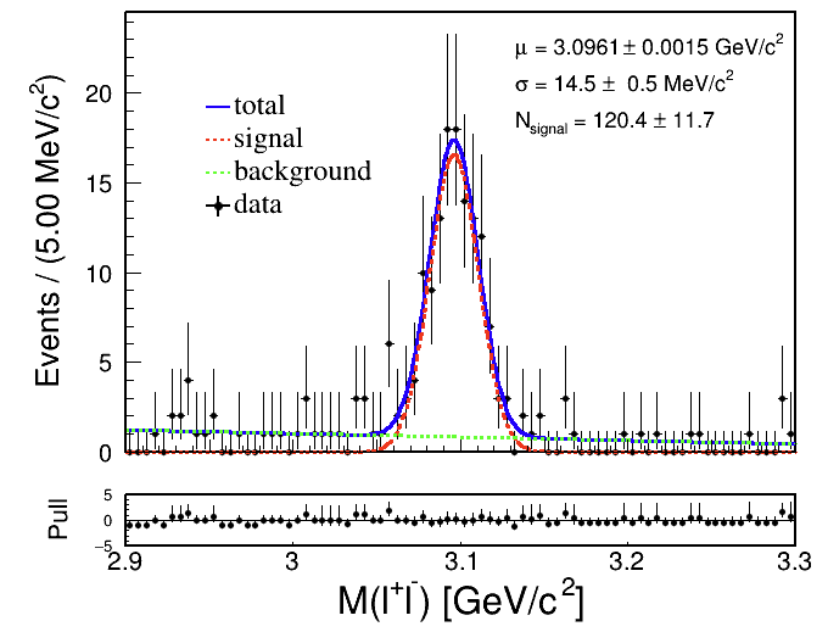
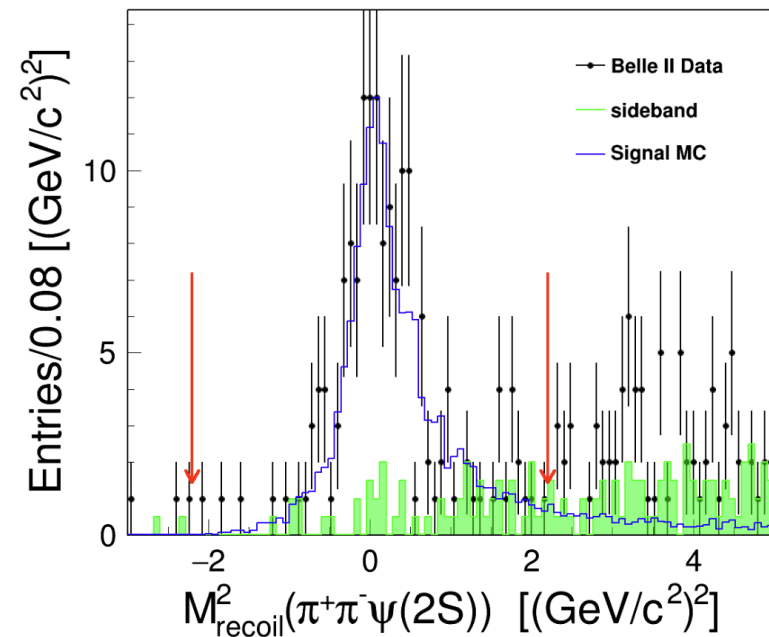
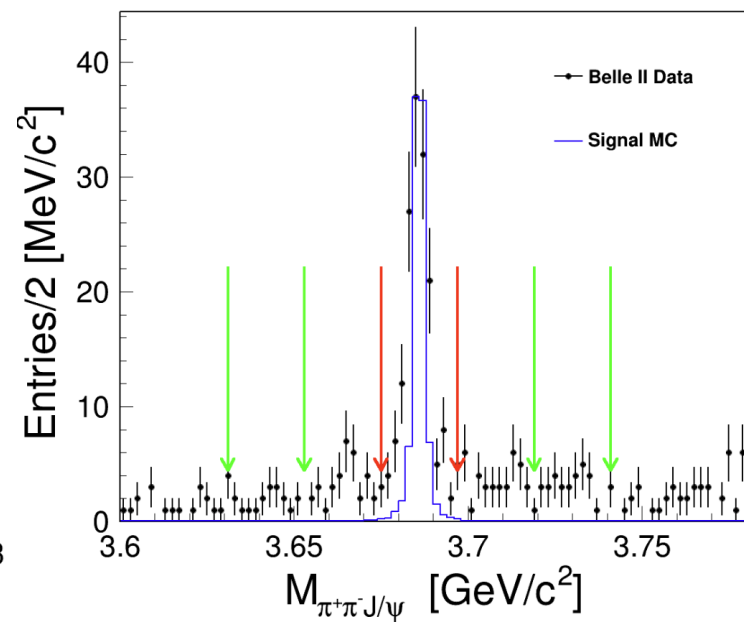
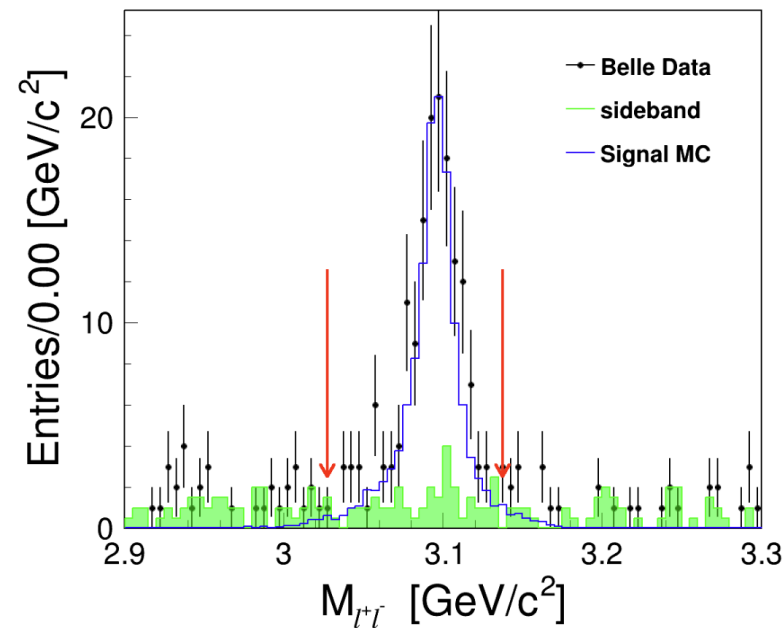
The affected variables are: Eher, Eler, XAngle, YAngle, mcLBoost, mcOBoost. These variables should be removed from the list of variables when running on MC and the jobs have to be resubmitted.

No effect to recoil mass and C.M.S related variables.

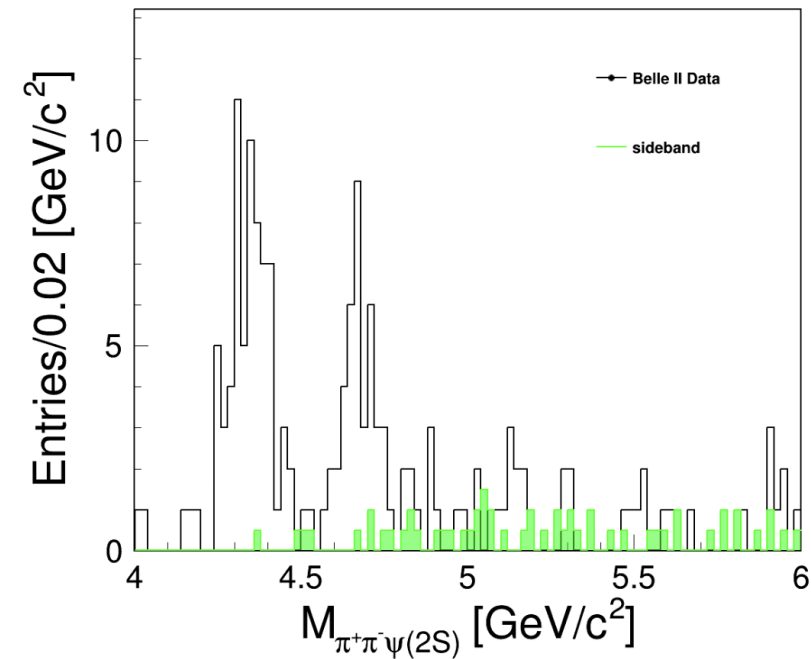
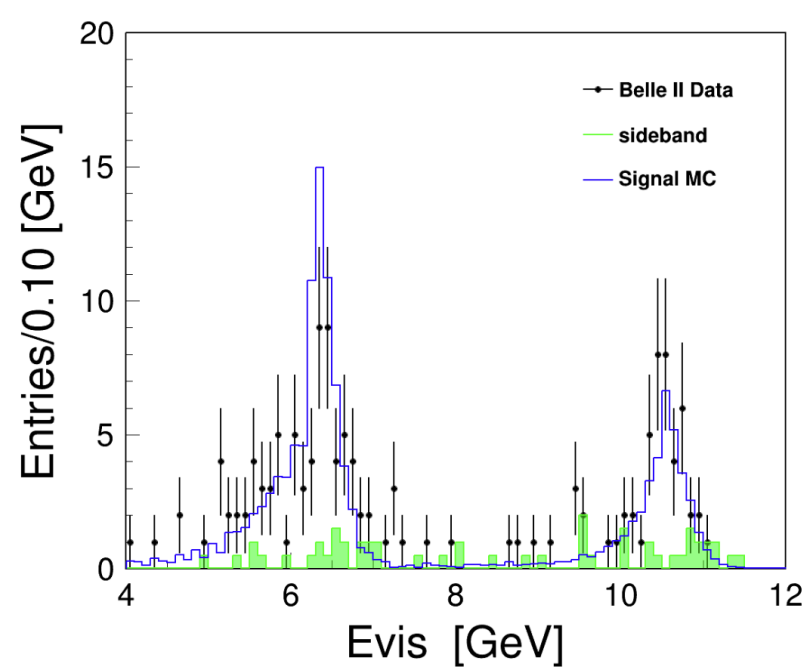
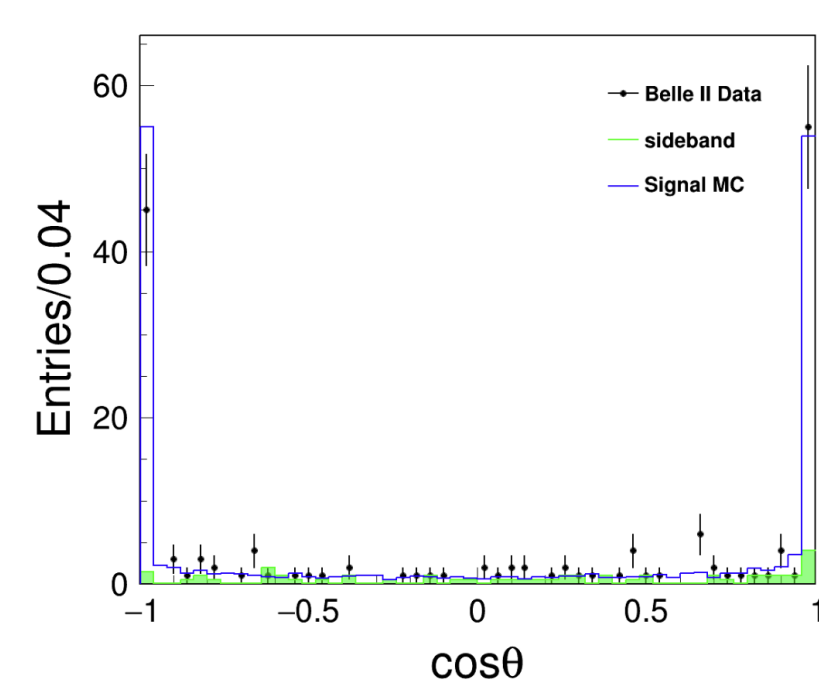
Run1+Run2 results

- Charged tracks
 - all charged tracks are required to originate from the vicinity of the interaction point $|dr| < 1 \text{ cm}$, $|dz| < 5 \text{ cm}$, where dr and dz are transverse and longitudinal distances in respect to interaction point (IP)
 - $N_{\text{trk}} < 8$
- Particle Identification
 - $\text{muID} > 0.9$ for one μ in $\psi(2S) \rightarrow \pi^+\pi^-J/\psi$ channel
 - $\text{muID} > 0.5$ for all μ in $\psi(2S) \rightarrow \mu^+\mu^-$ channel
 - $\text{eID} > 0.5$ for all e
 - $\text{atcPIDBelle}(2,3) > 0.6$ and $\text{eIDBelle} < 0.75$ for all π
- Bremsstrahlung photons
 - within 0.05 radians of the original electrons.
- Best candidate for $||M_{\ell^+\ell^-} - M_{\ell^+\ell^-\pi^+\pi^-}| - 0.589|$
- J/ψ , $\psi(2S)$, Y reconstruction
 - Bremsstrahlung correction for $J/\psi \rightarrow e^+e^-$
 - $3.0275 \text{ GeV}/c^2 < M_{l+l^-} < 3.1375 \text{ GeV}/c^2$
 - $|M_{\pi^+\pi^-J/\psi}(M_{\pi^+\pi^-\ell^+\ell^-} - M_{\ell^+\ell^-} + 3.097) - 3.686| < 11 \text{ MeV}/c^2$
 - $3.653 \text{ GeV}/c^2 < M_{\pi^+\pi^-J/\psi} < 3.631 \text{ GeV}/c^2$ & $3.719 \text{ GeV}/c^2 < M_{\pi^+\pi^-J/\psi} < 3.741 \text{ GeV}/c^2$ for $\psi(2S)$ sideband
- $|M_{\text{Rec}}^2| < 2.2 (\text{GeV}/c^2)^2$ for $\pi^+\pi^-\psi(2S)$ to identify ISR events

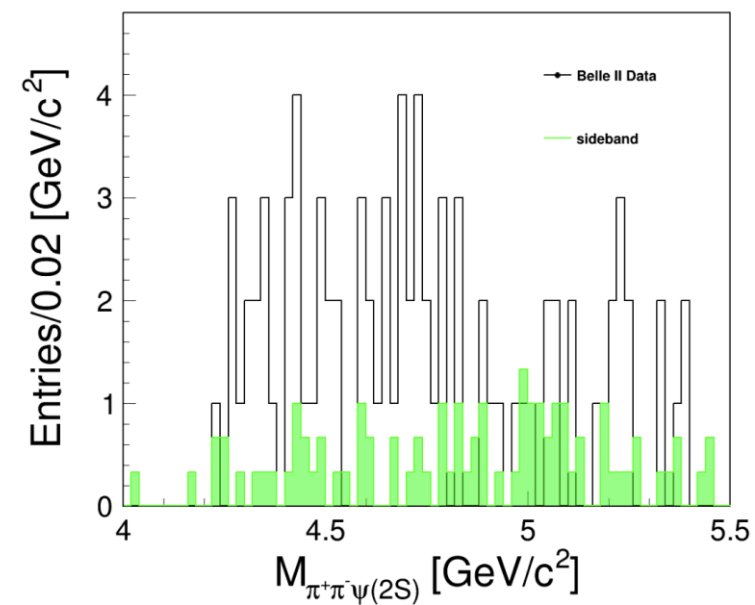
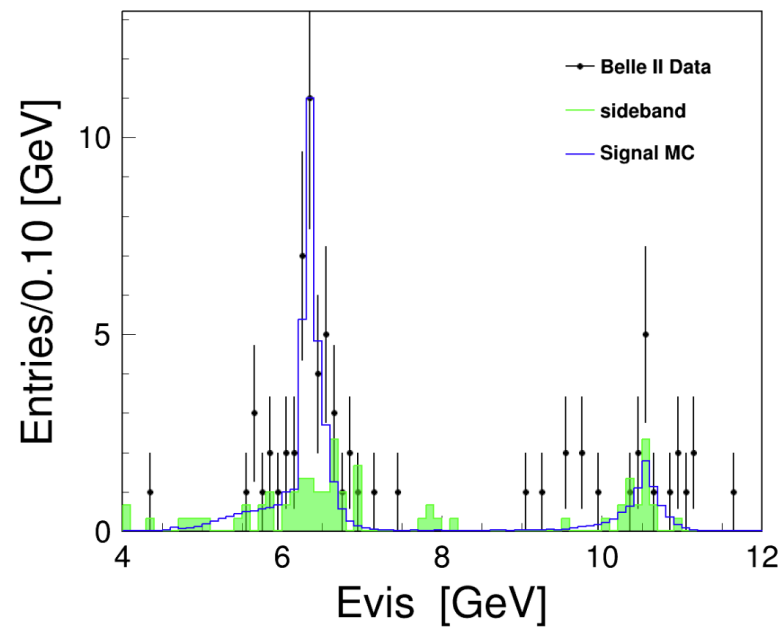
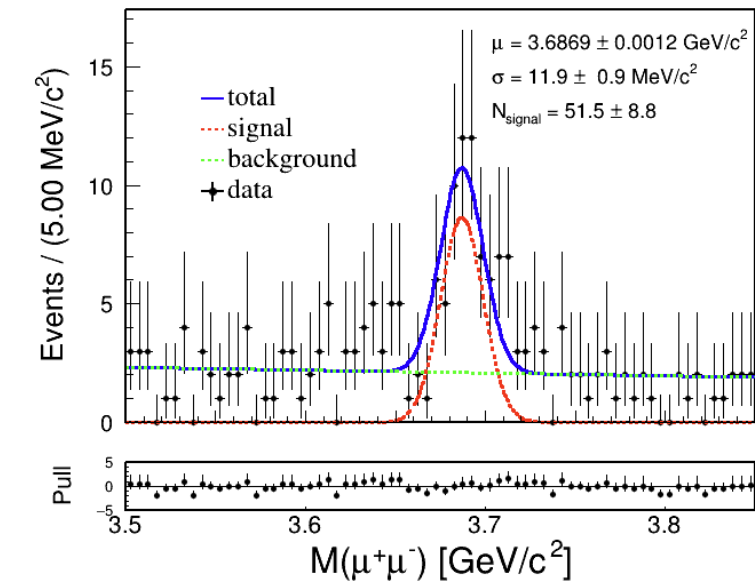
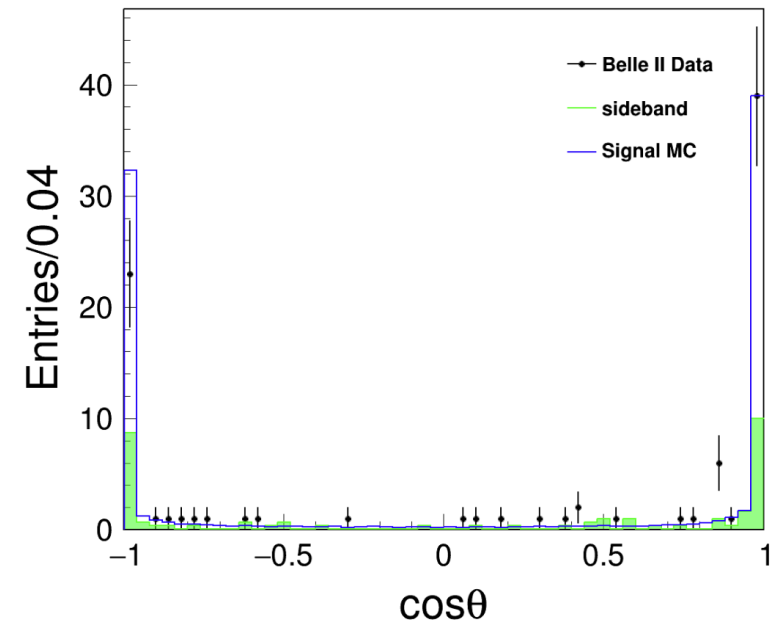
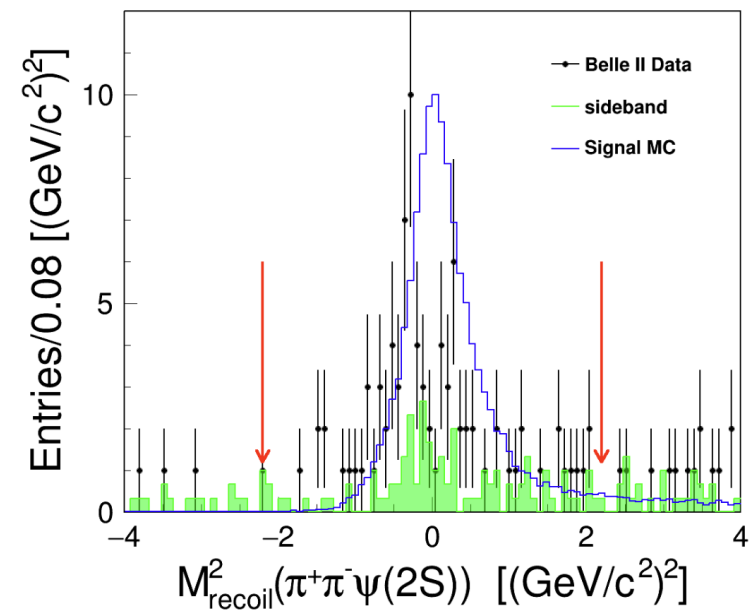
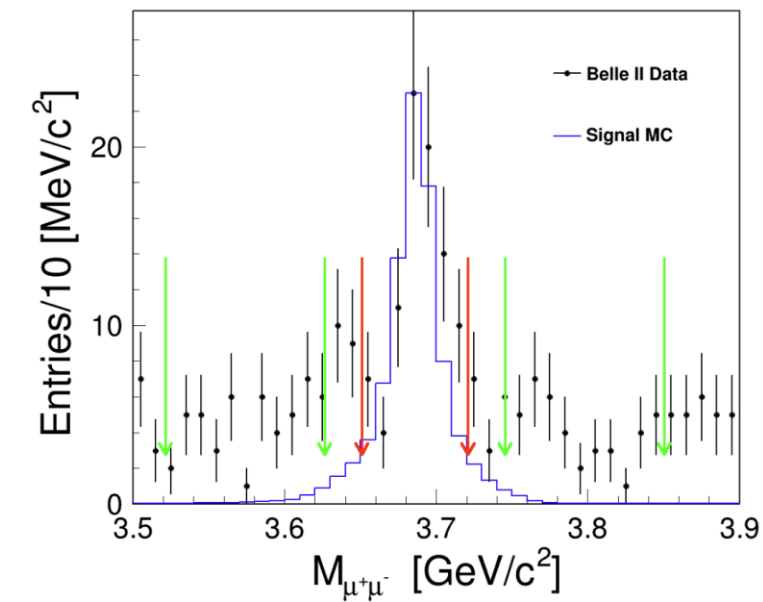
Run1+Run2 results ($\pi^+\pi^-J/\psi$)



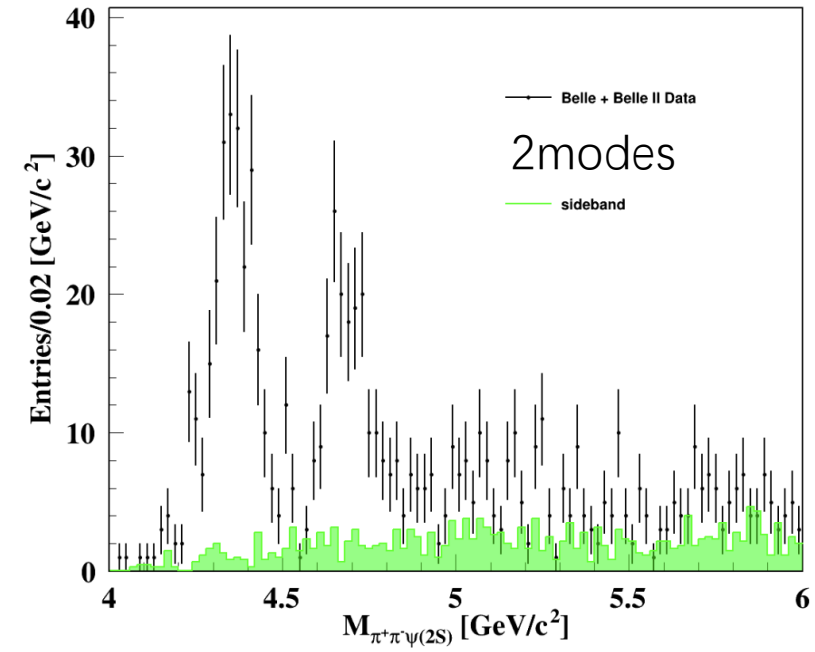
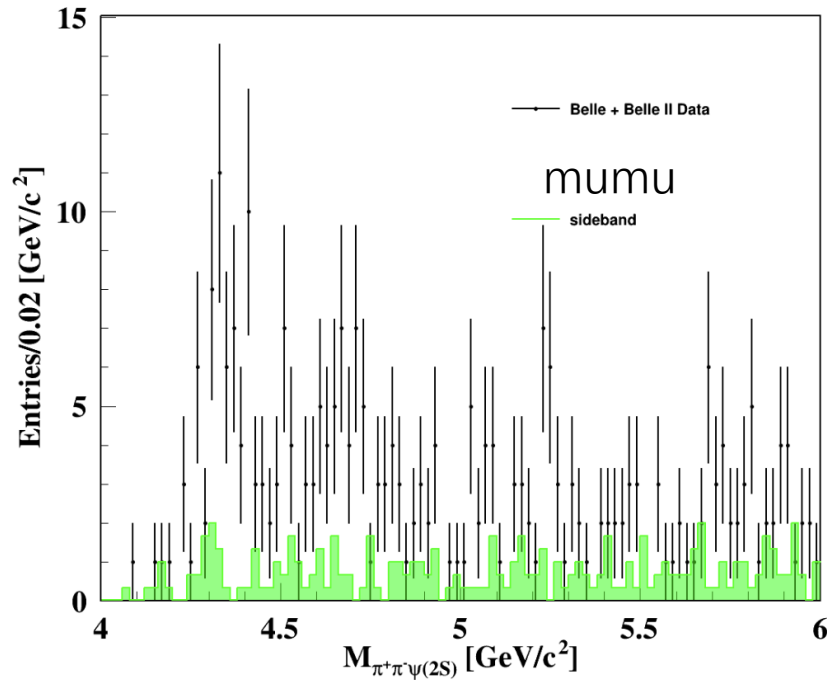
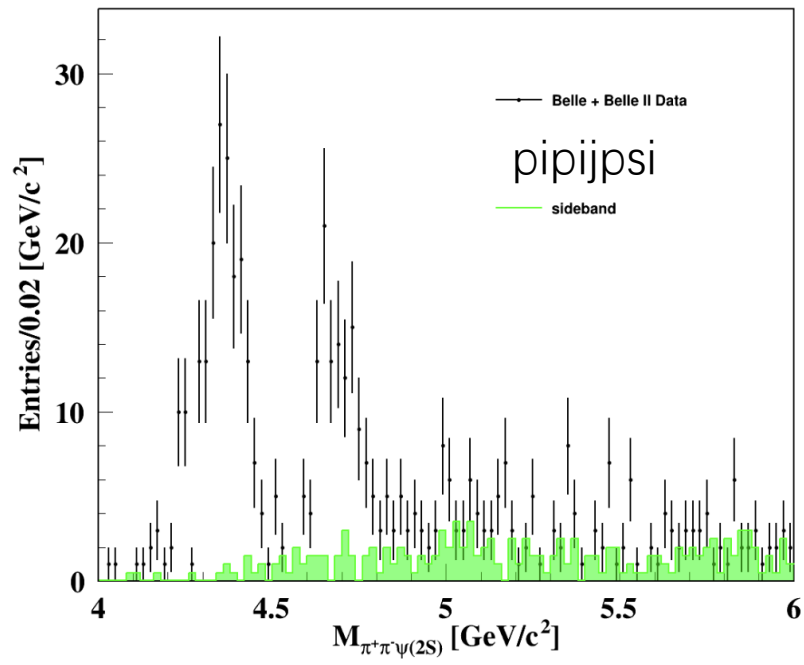
Run1+Run2 results ($\pi^+\pi^-\psi$)



Run1+Run2 results ($\mu^+\mu^-$)



B1+B2 results



B1+B2 results (2modes)

