



Check of track-collision reassociation in MC in pp collisions

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Datasets and cuts

Prompt Jpsi, Psi2S: LHC24d4a: anchored to pass6 data

Non-prompt Jpsi, Psi2S: LHC24d4b: anchored to pass6 data

jira: https://its.cern.ch/jira/browse/O2-4849

Event selection: |VtxZ| < 10 cm

- Track selection:
 - ➢ pT > 1 GeV/c
 - ▶ |η| < 0.9</p>
 - > TPCncls > 90
 - ➢ TPCchi2 < 4</p>
 - ➢ ITSncls > 2
 - > At least one hit on the first 2 layers
 - ➢ |DCAxy| < 1 cm</p>
 - ➢ |DCAz| < 1 cm</p>
 - $ightarrow -2 < TPCn\sigma_e < 3$
 - \succ *TPCn* σ_p > 3
 - \succ *TPCn* $\sigma_{\pi} > 3$

Prompt J/ ψ



Non-prompt J/ ψ



Prompt/non-prompt J/ ψ



 \succ The ratio of efficiency for prompt and non-prompt J/ ψ are different without reassociation.

> After the reassociation, the ratio is similar. But after removing the ambiguous pairs, the difference increase.

Prompt $\psi(2S)$



Non-prompt $\psi(2S)$



Prompt/non-prompt $\psi(2S)$



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$\psi(2S)$ -to-J/ ψ ratio



- The psi2S-to-Jpsi ratio is slightly different for prompt and non-prompt.
- After reassociation, the efficiency will not change too much.

Tracks check



Tracks checks



- DCAxy distribution is narrowed after association.
- DCAz distribution is centered after association.

TPC (noITS) tracks



TPC (noITS) tracks



DCA distribution is wide for TPC tracks.

TPC-TOF (noITS) tracks



The time resolution for TPC-TOF tracks are near zero.

TPC-TOF (noITS) tracks



ITS-TPC tracks



ITS-TPC tracks



Reassociation will not influence the DCAxy distribution.

Summary

> The influence of track-collision reassociation is studied in prompt and non-prompt J/ ψ and ψ (2S)

- > After the reassociation, the efficiency for prompt and non-prompt J/ ψ are different, because of the removing of ambiguous pairs.
- > The efficiency ratio of $\psi(2S)$ and J/ ψ are different for prompt and non-prompt. The association will not influence the ratio too much.

Further checks are needed to understand the performance of tracks w and w/o association.

Back up



ITS-TPC matched, all assoc