Charm Quark Jets in Au+Au Collisions at $\sqrt{s_{\mathrm{NN}}}$ = 200 GeV

QM 2023 Talk Proposal and Analysis Status

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What is your analysis status?

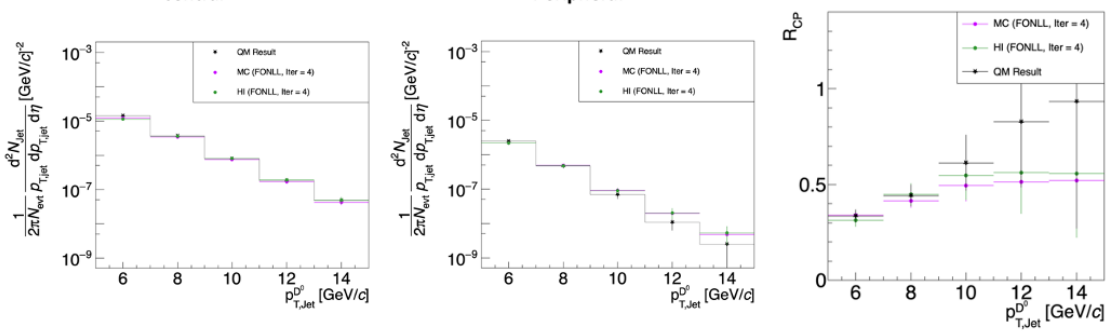
Available

- Updated results for D0 Jet pT spectrum for D0 pT ∈ [5, 10] GeV/c
- New results for D0 Fragmentation Function for D0 pT ∈ [5, 10] GeV/c

Unfolding Data With HI Overlay

- $3 < p_{T,Jet}^{Uncorrected} < 30$ GeV/c → $5 < p_{T,Jet}^{Corrected} < 20$ GeV/c
- $5 < p_{T,D^0} < 10$ GeV/c

STAR, Au + Au $\sqrt{s_{NN}}$ = 200 GeV



Slight differences in spectra – Good overall agreement

Fragmentation Function From Data – Unfolding using HI

FIRST LOOK

- $3 < p_{T,Jet}^{Uncorrected} < 30$ GeV/c → $5 < p_{T,Jet}^{Corrected} < 20$ GeV/c
- $5 < p_{T,D^0} < 10$ GeV/c

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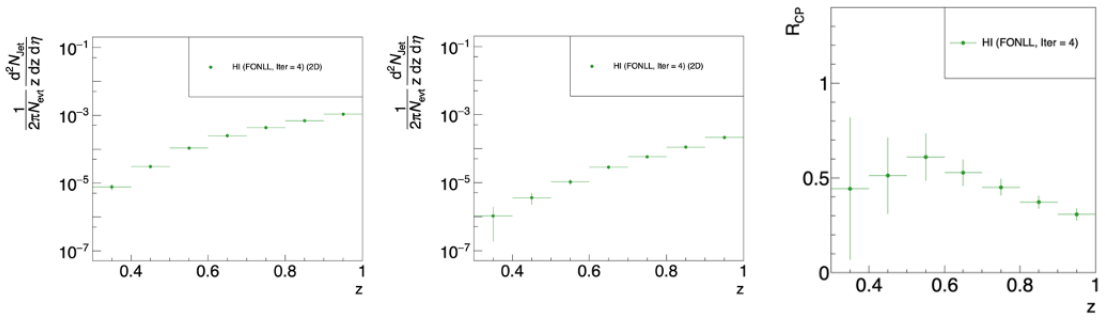

Unfolded Fragmentation With PYTHIA (FONLL) Prior for high pT D^0 in Jets.

Theory suggestions for comparison are welcome.

To be done:

- Updated results for D0 Radial Profile in jets for D0 pT ∈ [5, 10] GeV/c
- New results for D0 Jet pT Spectrum in jets for D0 pT ∈ [1, 10] GeV/c
- New results for D0 Fragmentation Function for D0 pT ∈ [1, 10] GeV/c

Issues with unfolding being addressed currently

Have you presented your analysis in hp-pwg yet?

Yes, the last update was during the STAR Collaboration Meeting.

https://drupal.star.bnl.gov/STAR/system/files/Diptanil_Roy_STAR_Collaboration_Meeting_2023.pdf

Are your plots "STAR preliminary”? When is paper proposal estimated?

- Some plots like the jet pT and radial profile for D0 pT [5,10] GeV/c are STAR preliminaries, but they have been updated.
- Need new preliminaries for fragmentation function for jets with D0 pT [5,10] GeV/c → **By end of May 2023**
- Need new preliminaries for all observables for jets with D0 pT [1,10] GeV/c → **By end of July 2023**
- **Paper Proposal around the end of July to allow for enough time for review before QM 2023**

Is there any change in your data points/physics message compared with your last "STAR preliminary" results? And have you presented these changes at hp-pwg?

- Yes, the jet pT and radial profile for D0 pT [5,10] GeV/c have been updated. The presentation was made at the Collaboration Meeting available above.
- I will make the presentation again in PWG for those who missed the update, or had questions during the meeting.
- The physics message for the jet pT plots and RCP are unchanged for D0 pT [5, 10] GeV/c.