



Study of
charm
hadronization
and
in-medium
modification
at the EICC

Comparison
of D^0 and
 \bar{D}^0

Selection
Criteria

Fit of D^0 and
 \bar{D}^0

Study of charm hadronization and in-medium modification at the Electron-ion Collider in China

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State Key Laboratory of Particle Detection and Electronics

Heavy Flavor Working Group Meeting
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China





Outline

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1 Comparison of D^0 and \bar{D}^0

2 Selection Criteria

3 Fit of D^0 and \bar{D}^0



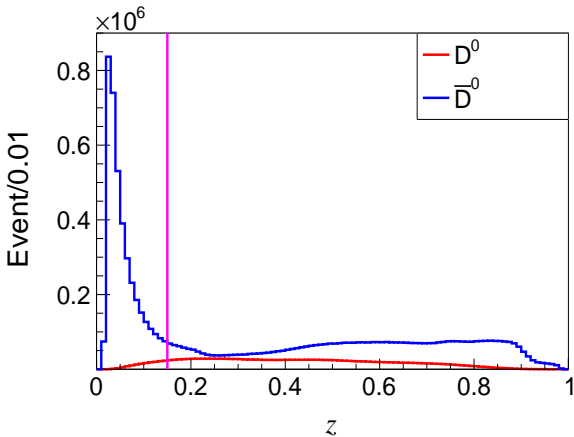
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■ DIS cut:

- $Q^2 > 2 \text{ GeV}^2$,
- $x < 0.1$,



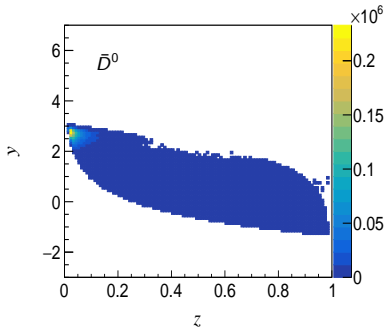
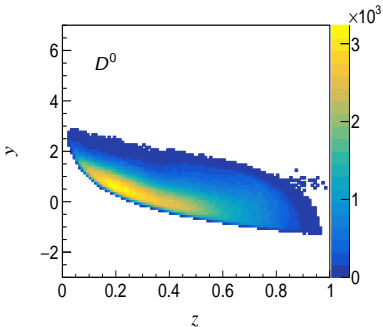
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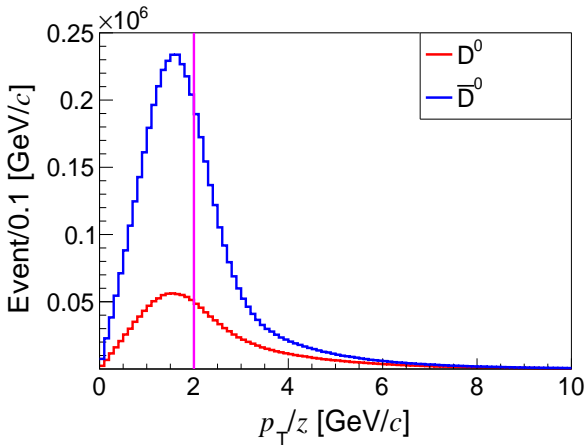
Selection Criteria of p_T/z of D^0 and \bar{D}^0

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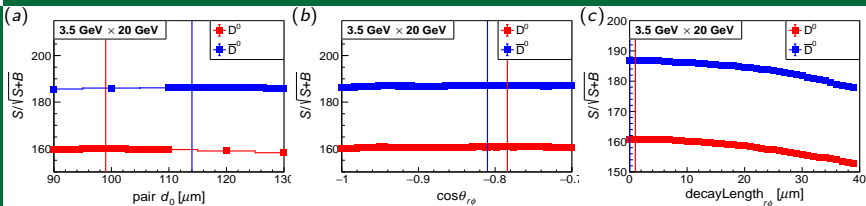
Selection Criteria

Study of charm hadronization and in-medium modification at the EIC

Comparison of D^0 and \bar{D}^0

Selection Criteria

Fit of D^0 and \bar{D}^0



- DIS cut:
 - $Q^2 > 2 \text{ GeV}^2$, $x < 0.1$.
- Charge selection: $\pi^+ K^-$ and $\pi^- K^+$.
- Decay topology:
 - Cuts on D^0 : $\cos\theta_{r\phi} > -0.784$, $dL > 1 \mu\text{m}$, pair $d_0 < 99 \mu\text{m}$.
 - Cuts on \bar{D}^0 : $\cos\theta_{r\phi} > -0.81$, $dL > 0 \mu\text{m}$, pair $d_0 < 114 \mu\text{m}$.
- PID cut with certain momentum range.

| Pseudo-rapidity region | PID Momentum upper limit [GeV] |
|------------------------|--------------------------------|
| $[-3, -1)$ | 4 |
| $[-1, 1)$ | 6 |
| $[1, 3)$ | 15 |
| Otherwise | Not analysed |



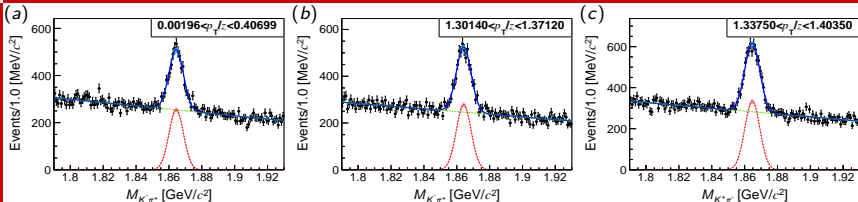
Fit of D^0 and \bar{D}^0

Study of charm hadronization and in-medium modification at the EICC

Comparison of D^0 and \bar{D}^0

Selection Criteria

Fit of D^0 and \bar{D}^0



| D^0 | | | | \bar{D}^0 | | | |
|------------------|------------------|----------------------|-------------------------|------------------|------------------|----------------------|-------------------------|
| $(p_T/z)_{\min}$ | $(p_T/z)_{\max}$ | N^{signal} | $N^{\text{background}}$ | $(p_T/z)_{\min}$ | $(p_T/z)_{\max}$ | N^{signal} | $N^{\text{background}}$ |
| 0.00196 | 0.40699 | 2801^{+104}_{-102} | 6683^{+90}_{-90} | 0.00115 | 0.43860 | 3411^{+118}_{-116} | 9269^{+106}_{-106} |
| 0.40699 | 0.57502 | 2766^{+100}_{-99} | 6629^{+89}_{-89} | 0.43860 | 0.61490 | 3579^{+115}_{-114} | 8842^{+104}_{-103} |
| 0.57502 | 0.70390 | 2998^{+103}_{-102} | 6455^{+88}_{-88} | 0.61490 | 0.74700 | 3629^{+118}_{-116} | 8992^{+105}_{-105} |
| 0.70390 | 0.81160 | 3011^{+103}_{-102} | 6640^{+90}_{-90} | 0.74700 | 0.85800 | 3679^{+113}_{-112} | 8310^{+100}_{-100} |
| 0.81160 | 0.90815 | 2986^{+102}_{-101} | 6289^{+87}_{-87} | 0.85800 | 0.95470 | 3642^{+111}_{-109} | 7747^{+97}_{-96} |
| 0.90815 | 0.99607 | 2848^{+101}_{-99} | 6570^{+89}_{-88} | 0.95470 | 1.04230 | 3649^{+112}_{-111} | 8010^{+98}_{-98} |
| 0.99607 | 1.07790 | 2872^{+102}_{-100} | 6391^{+88}_{-88} | 1.04230 | 1.12230 | 3588^{+110}_{-109} | 7722^{+97}_{-96} |
| 1.07790 | 1.15510 | 3166^{+102}_{-101} | 6628^{+90}_{-89} | 1.12230 | 1.19760 | 3627^{+113}_{-112} | 8070^{+99}_{-99} |
| 1.15510 | 1.22920 | 3170^{+103}_{-103} | 6743^{+91}_{-90} | 1.19760 | 1.26920 | 3788^{+115}_{-113} | 7865^{+98}_{-98} |
| 1.22920 | 1.30140 | 3082^{+103}_{-102} | 6516^{+89}_{-89} | 1.26920 | 1.33750 | 3576^{+107}_{-106} | 7372^{+94}_{-93} |
| 1.30140 | 1.37120 | 3141^{+102}_{-102} | 6671^{+90}_{-90} | 1.33750 | 1.40350 | 3820^{+110}_{-109} | 7757^{+97}_{-97} |
| 1.37120 | 1.43990 | 3266^{+102}_{-101} | 6600^{+89}_{-89} | 1.40350 | 1.46860 | 3720^{+111}_{-110} | 7792^{+97}_{-97} |
| 1.43990 | 1.50720 | 3102^{+102}_{-102} | 6615^{+89}_{-89} | 1.46860 | 1.53260 | 3872^{+111}_{-111} | 7750^{+97}_{-97} |
| 1.50720 | 1.57500 | 3031^{+102}_{-101} | 6590^{+89}_{-89} | 1.53260 | 1.59600 | 3812^{+112}_{-111} | 7595^{+96}_{-96} |
| 1.57500 | 1.64290 | 3124^{+101}_{-100} | 6629^{+89}_{-89} | 1.59600 | 1.65950 | 3935^{+114}_{-113} | 7890^{+98}_{-98} |
| 1.64290 | 1.71190 | 3323^{+107}_{-106} | 7097^{+93}_{-93} | 1.65950 | 1.72350 | 3849^{+114}_{-113} | 8246^{+100}_{-100} |
| 1.71190 | 1.78070 | 3303^{+106}_{-106} | 7232^{+94}_{-94} | 1.72350 | 1.78920 | 3995^{+115}_{-115} | 8176^{+100}_{-100} |
| 1.78070 | 1.85130 | 3215^{+105}_{-105} | 7119^{+93}_{-93} | 1.78920 | 1.85650 | 3676^{+110}_{-109} | 7750^{+96}_{-96} |
| 1.85130 | 1.92340 | 3268^{+106}_{-105} | 6993^{+92}_{-92} | 1.85650 | 1.92660 | 3582^{+112}_{-110} | 8105^{+99}_{-98} |
| 1.92340 | 2.00000 | 3154^{+106}_{-106} | 7479^{+95}_{-95} | 1.92660 | 2.00000 | 4012^{+117}_{-115} | 8613^{+102}_{-102} |