

Ratio to nominal

1.3

**STAR**

$p+p \rightarrow p' + \pi^+ \pi^- + p'$   $\sqrt{s} = 200$  GeV

$\pi^+, \pi^-:$

$p_T > 0.2$  GeV

$|\eta| < 0.7$

$p': (p_x + 0.3 \text{ GeV})^2 + p_y^2 < 0.25 \text{ GeV}^2$

$0.2 \text{ GeV} < |p_y| < 0.4 \text{ GeV}$

$p_x > -0.2 \text{ GeV}$

1.2

1.1

1

0.9

-1

-0.5

0

0.5

1

$\cos\theta^{\text{CS}}(\pi^+)$

$\epsilon_{\text{TPC}}^{\uparrow}$  (embed. stat.)

$\epsilon_{\text{TPC}}^{\uparrow}$  (pile-up)

$\epsilon_{\text{TPC}}^{\uparrow}$  (dead mat.)

$\epsilon_{\text{TOF}}^{\uparrow}$

$\epsilon_{\text{RP}}^{\uparrow}$

$\langle Z_{\text{vtx}} \rangle^{\uparrow}$

$\sigma(Z_{\text{vtx}})^{\uparrow}$

Luminosity $^{\uparrow}$

$\epsilon_{\text{TPC}}^{\downarrow}$  (embed. stat.)

$\epsilon_{\text{TPC}}^{\downarrow}$  (pile-up)

$\epsilon_{\text{TPC}}^{\downarrow}$  (dead mat.)

$\epsilon_{\text{TOF}}^{\downarrow}$

$\epsilon_{\text{RP}}^{\downarrow}$

$\langle Z_{\text{vtx}} \rangle^{\downarrow}$

$\sigma(Z_{\text{vtx}})^{\downarrow}$

Luminosity $^{\downarrow}$

Total (w/o lumi.)

Total (w/ lumi.)