

STAR $p+p \rightarrow p' + p\bar{p} + p' \quad \sqrt{s} = 200 \text{ GeV}$ p, \bar{p} : $p_{\text{T}} > 0.4 \text{ GeV}$ $|\eta| < 0.7$ $\min(p_{\text{T}}^+, p_{\text{T}}^-) < 1.1 \text{ GeV}$ p' : $(p_x + 0.3 \text{ GeV})^2 + p_y^2 < 0.25 \text{ GeV}^2$ $0.2 \text{ GeV} < |p_y| < 0.4 \text{ GeV}$ $p_x > -0.2 \text{ GeV}$

Ratio to nominal

1.2

1

-1

-0.5

0

0.5

 $\cos\theta^{\text{CS}}(p)$ $\epsilon_{\text{TPC}} \uparrow$ (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.)