

Plots for public viewing

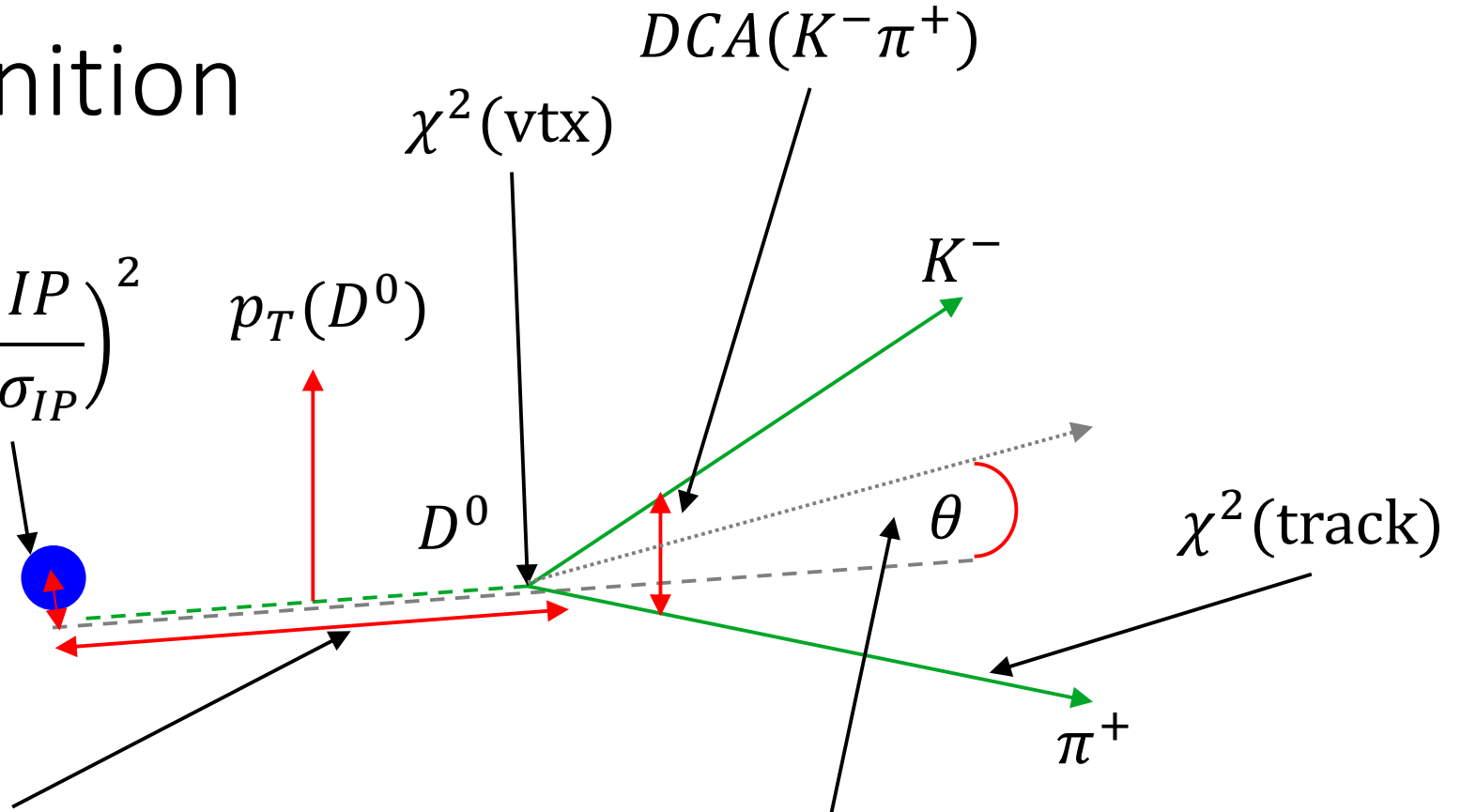
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Overview

- I'm seeking approval for two plots
 1. Simulated D0 reconstruction in AuAu with $p_T \geq 2$ GeV
 2. Simulated D0 reconstruction in AuAu with $p_T \geq 4$ GeV
- Both plots use 22×10^6 minimum-bias Hijing simulations with no embedding
 - Corresponds to approximately 25 minutes of data taking in normal operating conditions
- Events were selected using KFParticle and no truth information
- Fits were performed using RooFit
- [Full analysis note is available here](#)

Variable definition

$$IP \text{ and } IP\chi^2 = \left(\frac{IP}{\sigma_{IP}}\right)^2$$



$$\text{Flight Distance } (FD)\chi^2 = \overline{FD}c^{-1}\overline{FD}^T$$

Decay Length

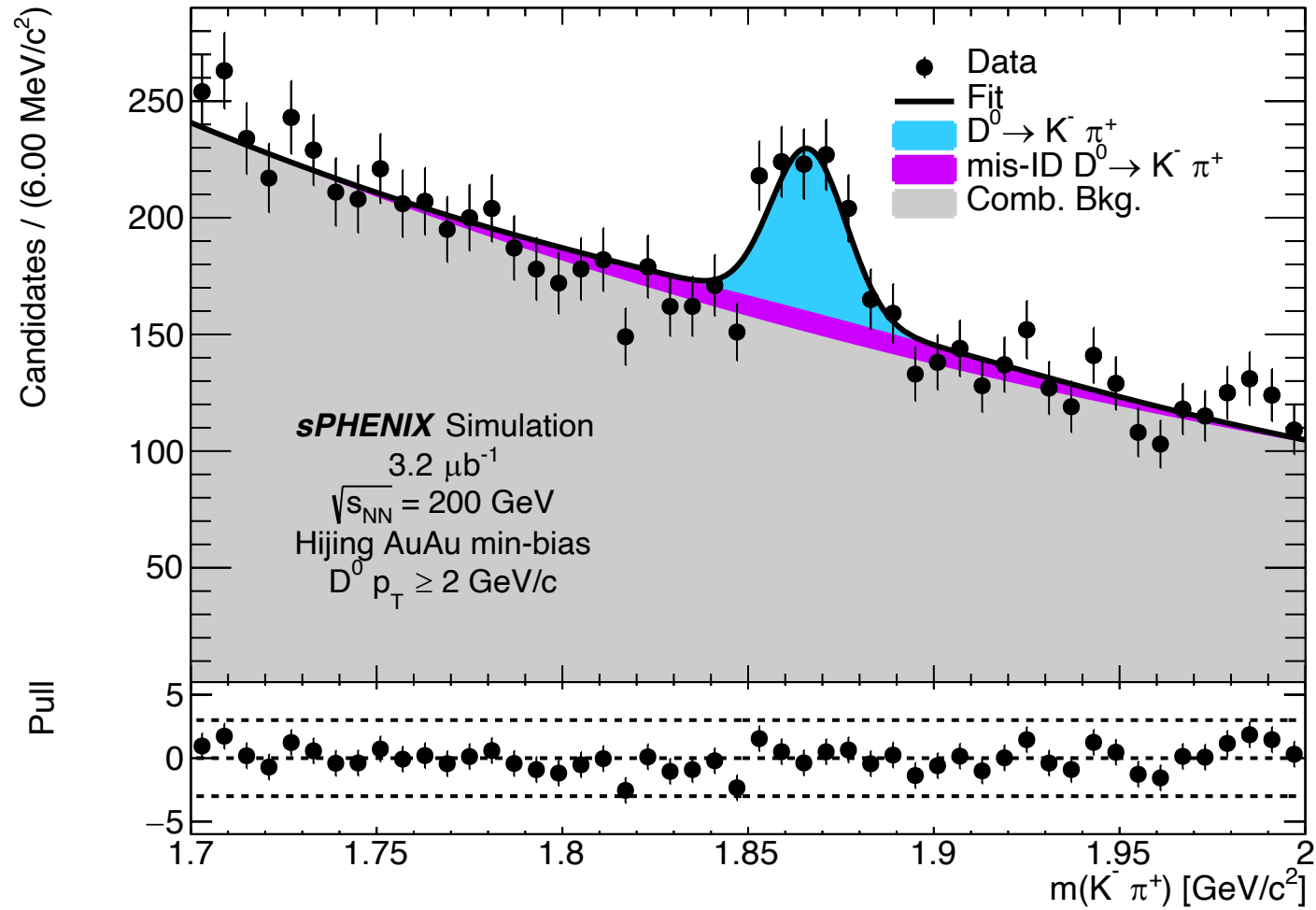
Decay Time

$$\cos \theta = \frac{\vec{p} \cdot \overline{FD}}{|\vec{p}| |\overline{FD}|} = \text{DIRA}$$

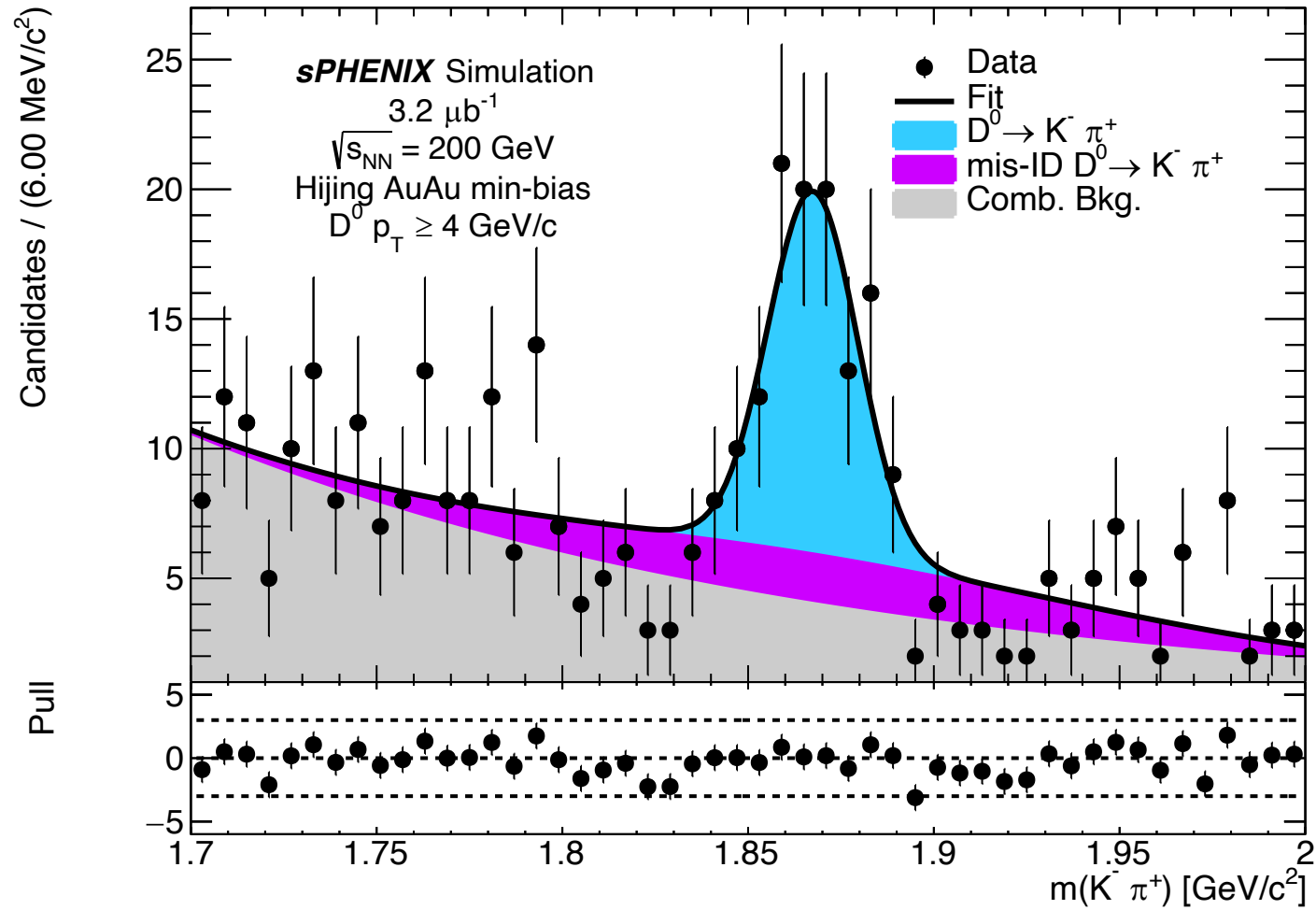
Selection

Variable	Cut
min. track IP [cm]	0.008
min. track p_T [GeV]	0.7
max. track $\chi^2/n\text{DoF}$	5
max. track-track DCA [cm]	0.005
D^0 IP χ^2	3
D^0 p_T [GeV]	2 or 4
D^0 $\chi^2/n\text{DoF}$	5
D^0 DIRA	0.98
$m_{K-\pi^+}$ [GeV]	1.70 \rightarrow 2.00

$D^0, p_T \geq 2 \text{ GeV}$



$D^0, p_T \geq 4 \text{ GeV}$



D^0 , $p_T \geq 4$ GeV, alternate

