

# Plots for public viewing

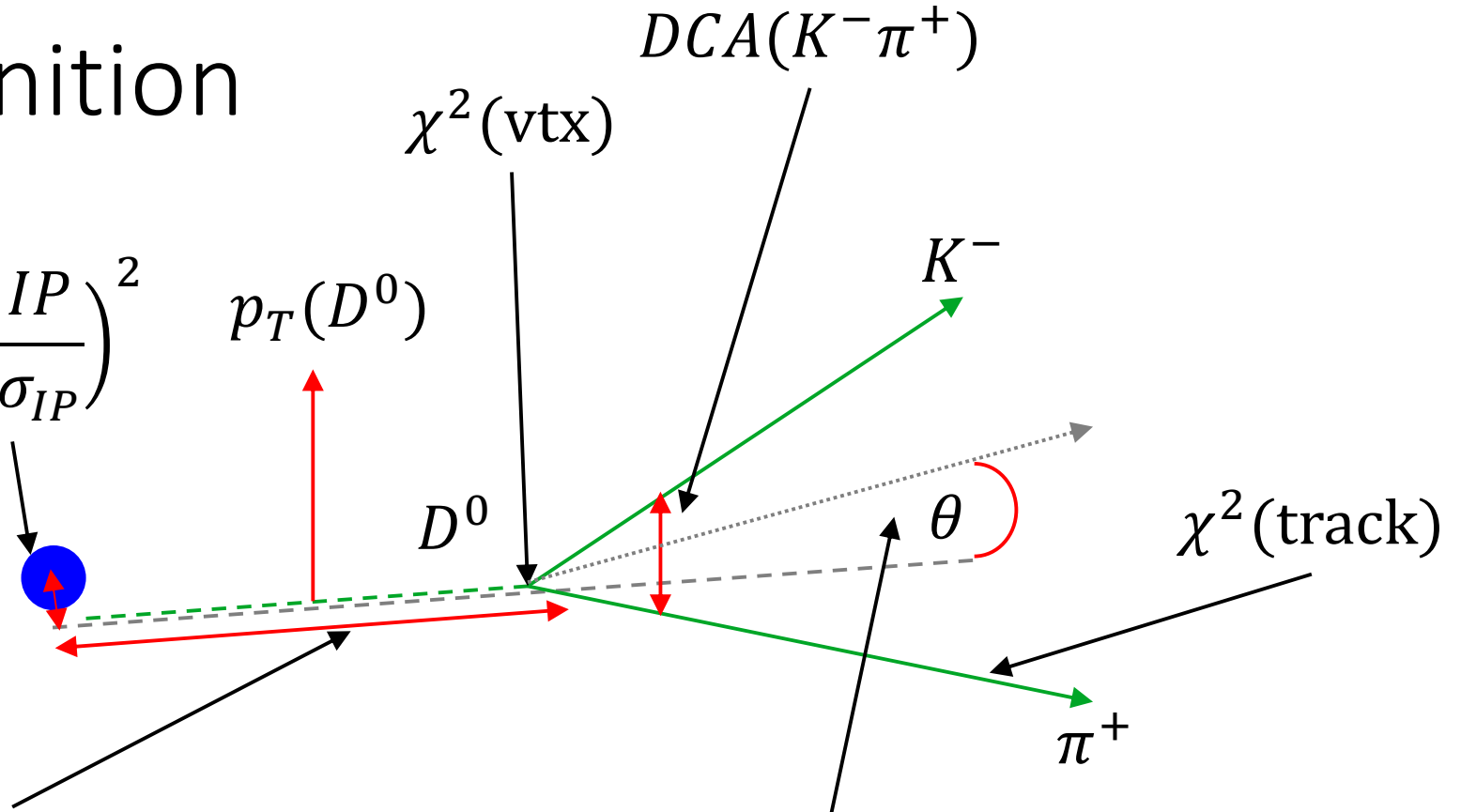
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# Overview

- 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  $22 \times 10^6$  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

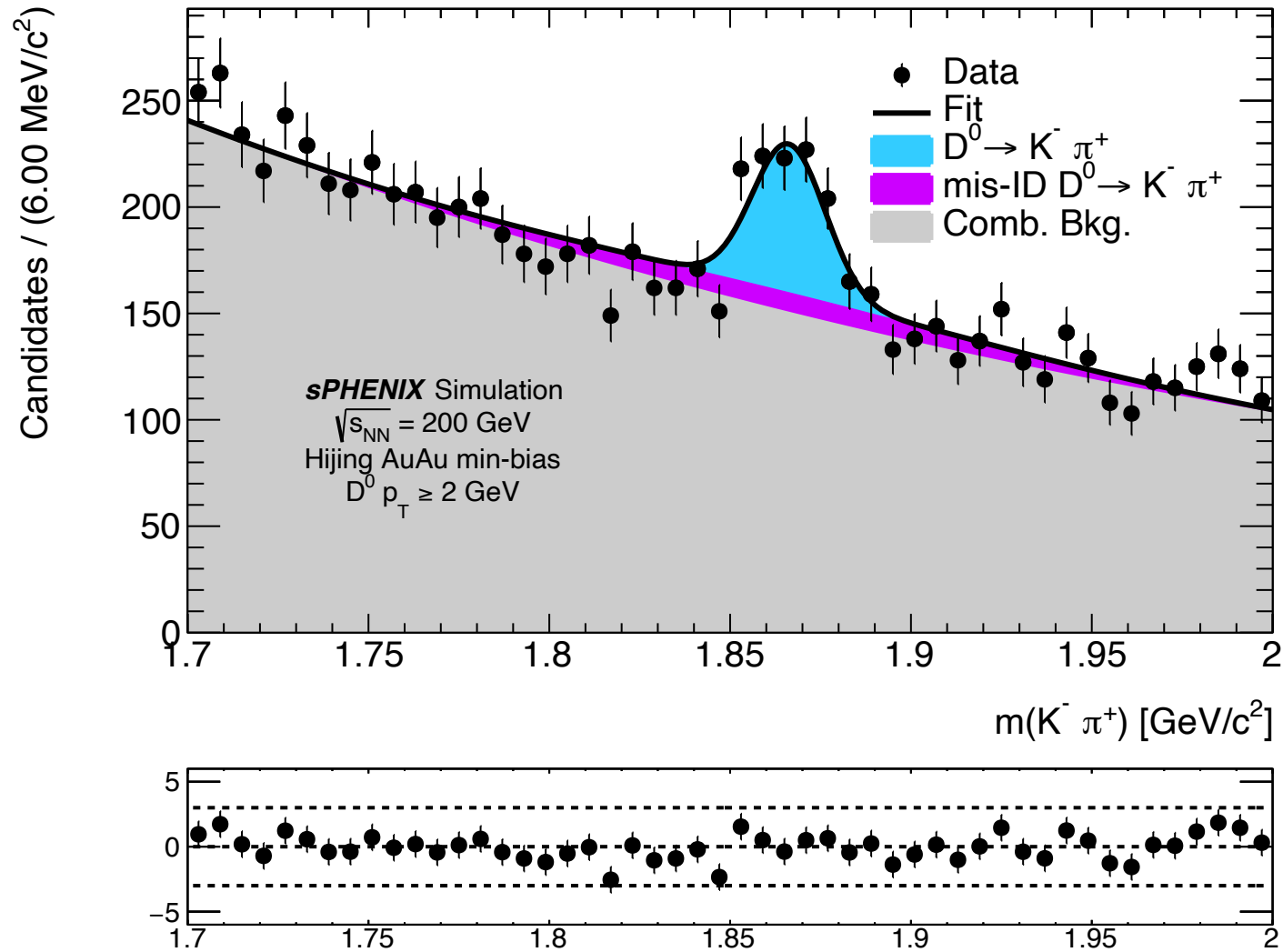
Decay Time

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

# Selection

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

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



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

