0.1 K$^\pm$ Track Selection

Charged kaons are identified using the AliFemtoESDTrackCutNSigmaFilter class. The specific cuts used in this analysis are as follows:

Track Selection:

- Kinematic range:

  - $0.14 < p_\mathrm{T} < 1.5$ GeV/c
  - $|\eta| < 0.8$

- FilterBit(7)

  - TPC tracks

- Track Quality

  - Minimum number of clusters in the TPC (fminTPCncls) = 80
  - Maximum allowed χ^2/N_{DOF} for ITS clusters = 3.0
  - Maximum allowed χ^2/N_{DOF} for TPC clusters = 4.0

- Primary Particle Selection:

  - Maximum XY impact parameter = 2.4 cm
  - Maximum Z impact parameter = 3.0 cm

- Remove particles with any kink labels (fRemoveKinks = true)
- Maximum allowed sigma to primary vertex (fMaxSigmaToVertex) = 3.0

K$^\pm$ Identification:

- PID Probabilities:

  - K: > 0.2
  - π: < 0.1
  - μ: < 0.8
  - p: < 0.1

- Most probable particle type must be Kaon (fMostProbable=3)

- TPC and TOF N$_\sigma$ cuts:

  - $p < 0.4$ GeV/c: N$_{\sigma K,\mathrm{TPC}} < 2$
  - $0.4 < p < 0.45$ GeV/c: N$_{\sigma K,\mathrm{TPC}} < 1$
  - $0.45 < p < 0.8$ GeV/c: N$_{\sigma K,\mathrm{TPC}} < 3$ & N$_{\sigma K,\mathrm{TOF}} < 2$
  - $0.8 < p < 1.0$ GeV/c: N$_{\sigma K,\mathrm{TPC}} < 3$ & N$_{\sigma K,\mathrm{TOF}} < 1.5$
  - $p > 1.0$ GeV/c: N$_{\sigma K,\mathrm{TPC}} < 3$ & N$_{\sigma K,\mathrm{TOF}} < 1$

- Electron Rejection: Reject if N$_{\sigma e^-,\mathrm{TPC}} < 3$

- Pion Rejection: Reject if:

  - $p < 0.65$ GeV/c

∗ if TOF and TPC available: $N_{\sigma\pi,\text{TPC}} < 3$ & $N_{\sigma\pi,\text{TOF}} < 3$
∗ else
· $p < 0.5$ GeV/c: $N_{\sigma\pi,\text{TPC}} < 3$
· $0.5 < p < 0.65$ GeV/c: $N_{\sigma\pi,\text{TPC}} < 2$

– $0.65 < p < 1.5$ GeV/c: $N_{\sigma\pi,\text{TPC}} < 5$ & $N_{\sigma\pi,\text{TOF}} < 3$
– $p > 1.5$ GeV/c: $N_{\sigma\pi,\text{TPC}} < 5$ & $N_{\sigma\pi,\text{TOF}} < 2$

$K^{\pm}$ selection		
$\lvert\eta\rvert$		< 0.8
p_{T}		$0.14 < p_{\text{T}} < 1.5$ GeV/c
FilterBit		7
Min. number of clusters in the TPC		80
Max. allowed χ^2/N_{DOF} for ITS clusters		3.0
Max. allowed χ^2/N_{DOF} for TPC clusters		4.0
Maximum XY impact parameter		2.4 cm
Maximum Z impact parameter		3.0 cm
Remove particles with any kink labels		true
Maximum allowed sigma to primary vertex		3.0
PID Probabilities		
K		> 0.2
π		< 0.1
μ		< 0.8
p		< 0.1
Most probable particle type		Kaon (fMostProbable=3)
TPC and TOF Nσ Cuts		
$p < 0.4$ GeV/c		$N_{\sigma K,\text{TPC}} < 2$
$0.4 < p < 0.45$ GeV/c		$N_{\sigma K,\text{TPC}} < 1$
$0.45 < p < 0.80$ GeV/c		$N_{\sigma K,\text{TPC}} < 3$ & $N_{\sigma K,\text{TOF}} < 2$
$0.80 < p < 1.0$ GeV/c		$N_{\sigma K,\text{TPC}} < 3$ & $N_{\sigma K,\text{TOF}} < 1.5$
$p > 1.0$ GeV/c		$N_{\sigma K,\text{TPC}} < 3$ & $N_{\sigma K,\text{TOF}} < 1$
Electron Rejection		Reject if $N_{\sigma e^-,\text{TPC}} < 3$
Pion Rejection: Reject if:		
$p < 0.65$ GeV/c	if TOF and TPC available		$N_{\sigma\pi,\text{TPC}} < 3$ & $N_{\sigma\pi,\text{TOF}} < 3$
	else	$p < 0.5$ GeV/c	$N_{\sigma\pi,\text{TPC}} < 3$
		$0.5 < p < 0.65$ GeV/c	$N_{\sigma\pi,\text{TPC}} < 2$
$0.65 < p < 1.5$ GeV/c			$N_{\sigma\pi,\text{TPC}} < 5$ & $N_{\sigma\pi,\text{TOF}} < 3$
$p > 1.5$ GeV/c			$N_{\sigma\pi,\text{TPC}} < 5$ & $N_{\sigma\pi,\text{TOF}} < 2$

Table 1: $K^{\pm}$ selection

The purity of the $K^{\pm}$ collections was estimated using the HIJING MC data, for which the true identity of each reconstructed $K^{\pm}$ particle is known. Therefore, the purity may be estimated as:

$$Purity(K^{\pm}) = \frac{N_{true}}{N_{reconstructed}} \tag{1}$$

Purity(K^+) ≈ Purity(K^-) ≈ 97%