

## 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:
  - $0.14 < p_T < 1.5 \text{ GeV}/c$
  - $|\eta| < 0.8$
- FilterBit(7)
  - TPC tracks
- Track Quality
  - Minimum number of clusters in the TPC (fminTPCncls) = 80
  - Maximum allowed  $\chi^2/N_{DOF}$  for ITS clusters = 3.0
  - Maximum allowed  $\chi^2/N_{DOF}$  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:  $> 0.2$
  - $\pi$ :  $< 0.1$
  - $\mu$ :  $< 0.8$
  - p:  $< 0.1$
- Most probable particle type must be Kaon (fMostProbable=3)
- TPC and TOF  $N_\sigma$  cuts:
  - $p < 0.4 \text{ GeV}/c$ :  $N_{\sigma K, TPC} < 2$
  - $0.4 < p < 0.45 \text{ GeV}/c$ :  $N_{\sigma K, TPC} < 1$
  - $0.45 < p < 0.8 \text{ GeV}/c$ :  $N_{\sigma K, TPC} < 3$  &  $N_{\sigma K, TOF} < 2$
  - $0.8 < p < 1.0 \text{ GeV}/c$ :  $N_{\sigma K, TPC} < 3$  &  $N_{\sigma K, TOF} < 1.5$
  - $p > 1.0 \text{ GeV}/c$ :  $N_{\sigma K, TPC} < 3$  &  $N_{\sigma K, TOF} < 1$
- Electron Rejection: Reject if  $N_{\sigma e^-, TPC} < 3$
- Pion Rejection: Reject if:
  - $p < 0.65 \text{ GeV}/c$

- \* 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:  $N_{\sigma\pi, \text{TPC}} < 5$  &  $N_{\sigma\pi, \text{TOF}} < 2$

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

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

$$\text{Purity}(K^+) \approx \text{Purity}(K^-) \approx 97\%$$