

0.1 Pair Selection

It is important to obtain true particle pairs in the analysis. In particular, contamination from pairs constructed with split or merged tracks, and pairs sharing daughters, can introduce an artificial signal into the correlation function, obscuring the actual physics. We impose the following pair cuts to combat these issues:

1. Shared Daughter Cut for Pairs

- (a) $V0$ - $V0$ Pairs (i.e. ΛK_S^0 analyses)
 - Remove all pairs which share a daughter
 - Ex. Λ and K_S^0 particles which share a π^- daughter are not included
- (b) $V0$ -Track Pairs (i.e. ΛK^\pm analyses)
 - Remove pairs if Track is also used as a daughter of the $V0$
 - In these analyses, this could only occur if, for instance, a K is misidentified as a π or p in the $V0$ reconstruction
- (c) Ξ -Track Pairs
 - Remove pairs if Track is also used as a daughter of the Ξ
 - In these analyses, this could only occur if, for instance, a K is misidentified as a π or p in the $V0$ reconstruction, or misidentified as bachelor π .

2. Average Separation Cuts (AvgSep)

- Used to cut out splitting and merging effects
- The motivation for these cuts can be seen in Figures 1, 2, and 3, in which average separation correlation functions are presented
- (a) ΛK_S^0 Analyses
 - $\text{AvgSep} > 6.0$ cm for like charge sign daughters
 - ex. p daughter of Λ and π^+ daughter of K_S^0
 - No cut for unlike-sign daughters
- (b) ΛK^\pm Analyses
 - $\text{AvgSep} > 8.0$ cm for daughter of $\Lambda(\bar{\Lambda})$ sharing charge sign of K^\pm
 - ex. in ΛK^+ analysis, p daughter of Λ with K^+
 - No cut for unlike signs
- (c) $\Xi^- K^\pm$ Analyses
 - $\text{AvgSep} > 8.0$ cm for any daughter of Ξ sharing charge sign of K^\pm
 - ex. in $\Xi^- K^-$ analysis, π^- daughter of Λ daughter with K^- , and bachelor π^- daughter with K^-
 - No cut for unlike signs

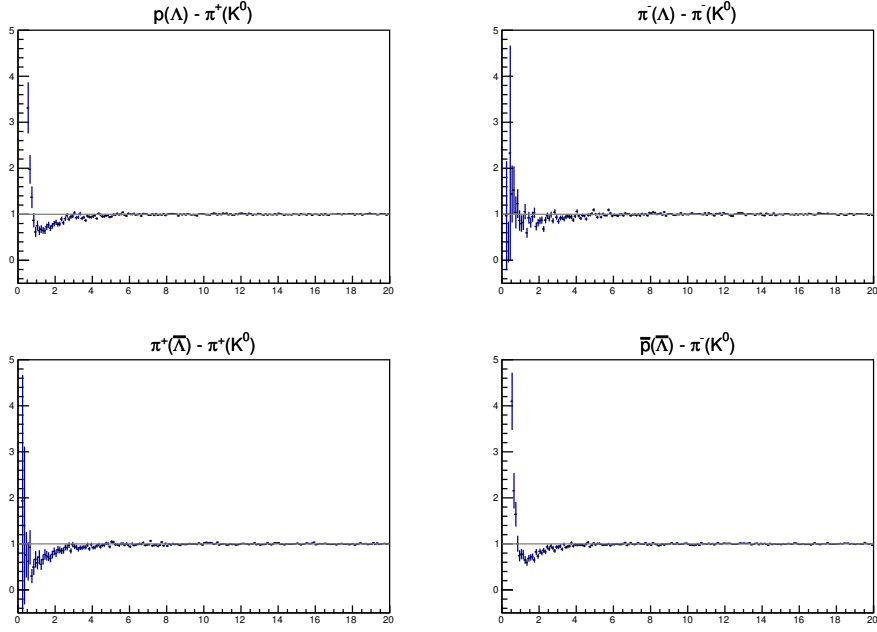


Fig. 1: Average separation (cm) correlation functions of $\Lambda(\bar{\Lambda})$ and K_S^0 Daughters. Only like-sign daughter pairs are shown (the distributions for unlike-signs were found to be flat). The title of each subfigure shows the daughter pair, as well as the mother of each daughter (in “()”), ex. top left is p from Λ with π^+ from K_S^0 .

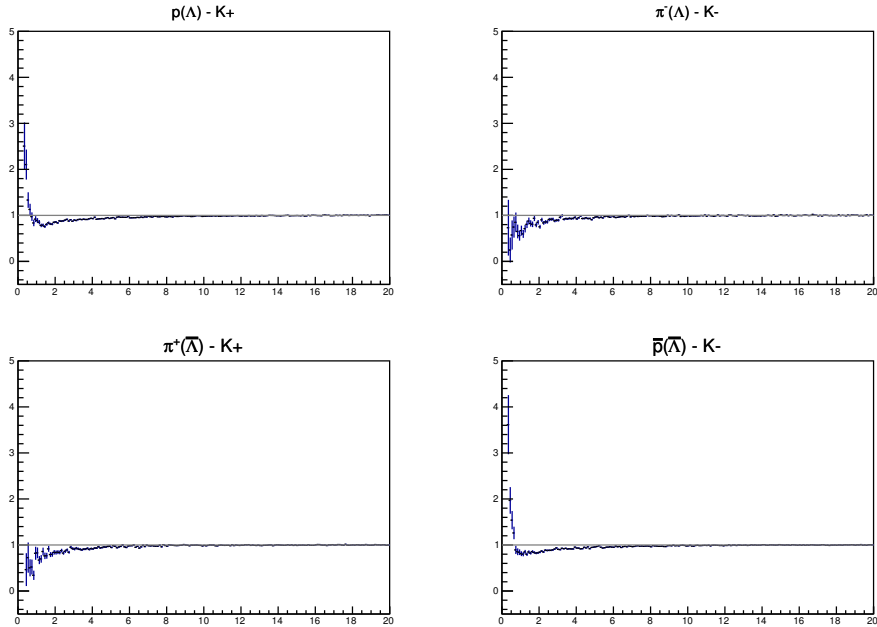


Fig. 2: Average separation (cm) correlation functions of $\Lambda(\bar{\Lambda})$ Daughter and K^\pm . Only like-sign pairs are shown (unlike-signs were flat). In the subfigure titles, the particles in “()” represent the mothers, ex. top left is p from Λ with K^+ .

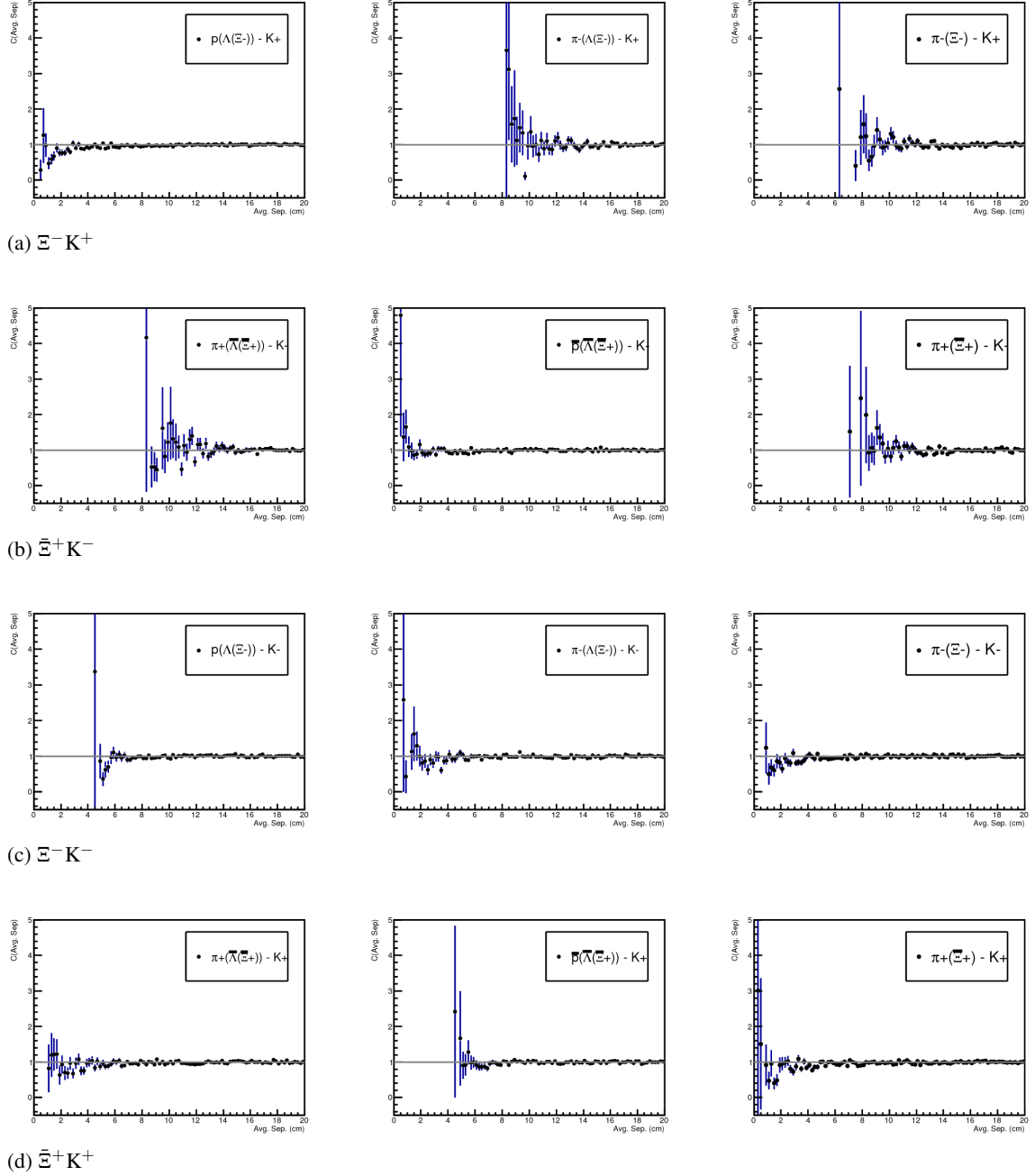


Fig. 3: Average separation (cm) correlation functions of Ξ Daughter and K^\pm . In the subfigure titles, the particles in “()” represent the mothers, ex. top left is p from Λ from Ξ^- with K^+ .