

0.1 Systematic Errors: ΛK^\pm

0.1.1 Particle and Pair Cuts

The cuts included in the systematic study, as well as the values used in the variations, are listed below. Note, the central value corresponds to that used in the analysis.

1. DCA $\Lambda(\bar{\Lambda})$: {4, 5, 6 mm}
2. DCA $\Lambda(\bar{\Lambda})$ Daughters: {3, 4, 5 mm}
3. $\Lambda(\bar{\Lambda})$ Cosine of Pointing Angle: {0.9992, 0.9993, 0.9994}
4. DCA to Primary Vertex of $p(\bar{p})$ Daughter of $\Lambda(\bar{\Lambda})$: {0.5, 1, 2 mm}
5. DCA to Primary Vertex of $\pi^-(\pi^+)$ Daughter of $\Lambda(\bar{\Lambda})$: {2, 3, 4 mm}
6. Average Separation of $\Lambda(\bar{\Lambda})$ Daughter with Same Charge as K^\pm : {7, 8, 9 cm}
7. Max. DCA to Primary Vertex in Transverse Plane of K^\pm : {1.92, 2.4, 2.88}
8. Max. DCA to Primary Vertex in Longitudinal Direction of K^\pm : {2.4, 3.0, 3.6}

0.1.2 Non-Flat Background

We fit our non-flat background with a linear function. To study the contribution of this choice to our systematic errors, we also fit with a quadratic and Gaussian form. The resulting uncertainties are combined with the uncertainties arising from our particle cuts.

0.1.3 Fit Range

Our choice of k^* fit range was varied by $\pm 25\%$. The resulting uncertainties in the extracted parameter sets were combined with our uncertainties arising from our particle and pair cuts.