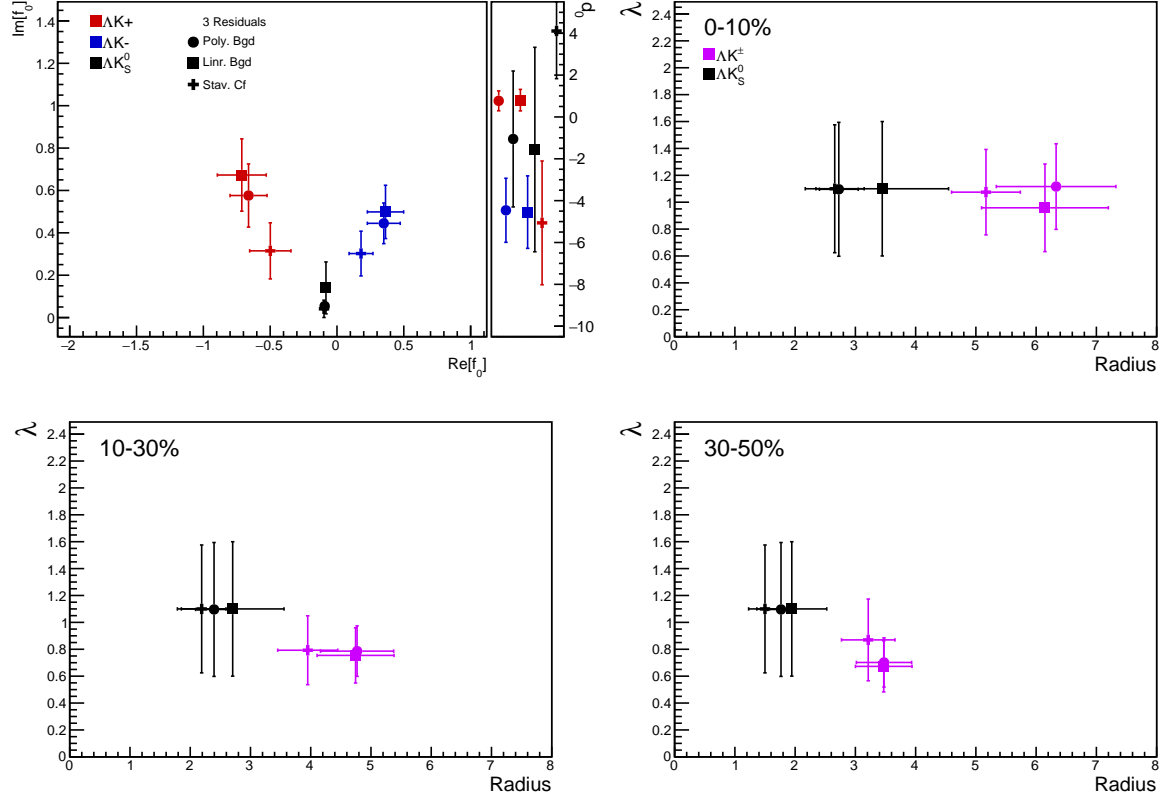
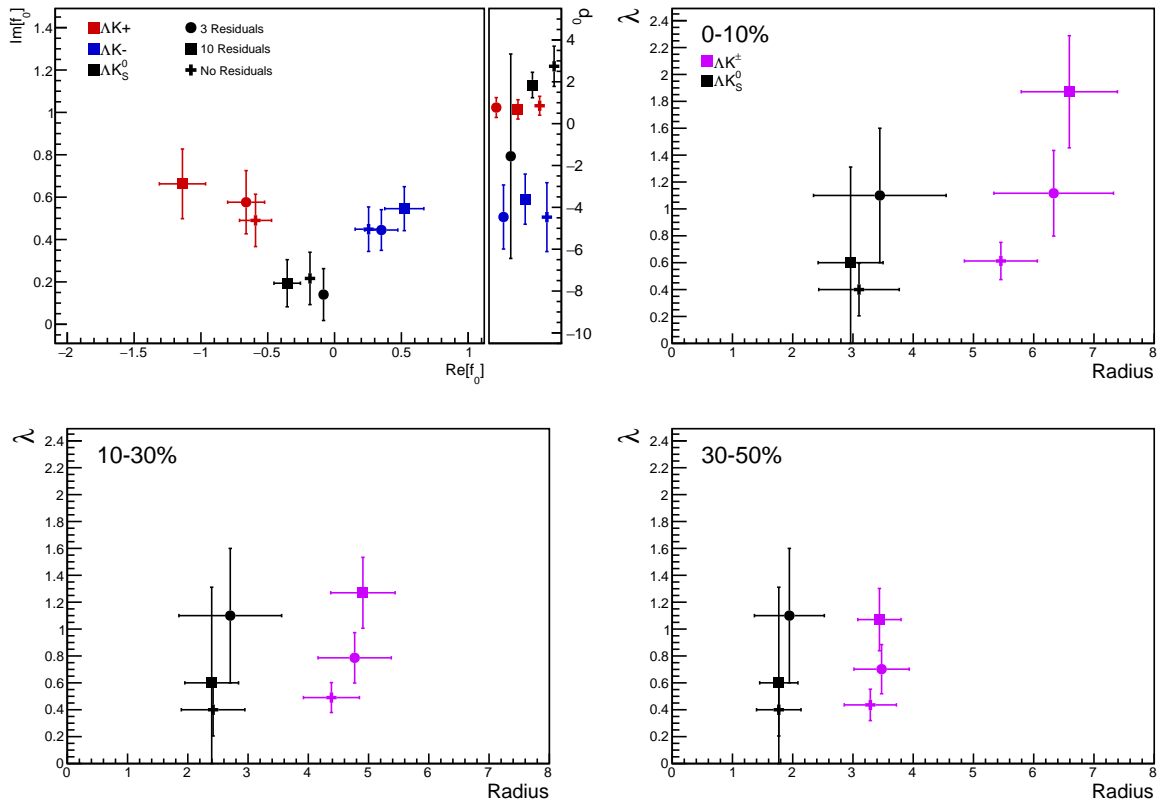


### 0.0.1 Fit Method Comparisons

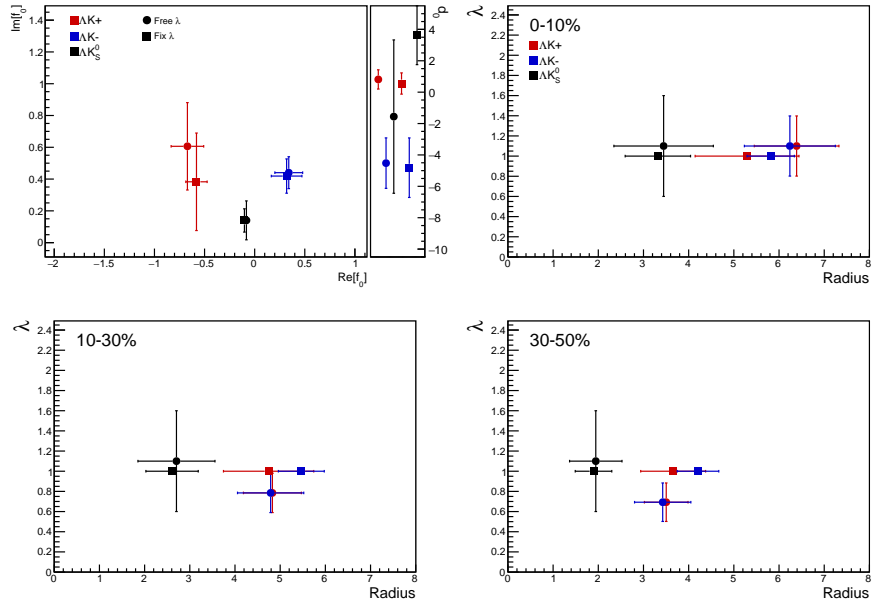
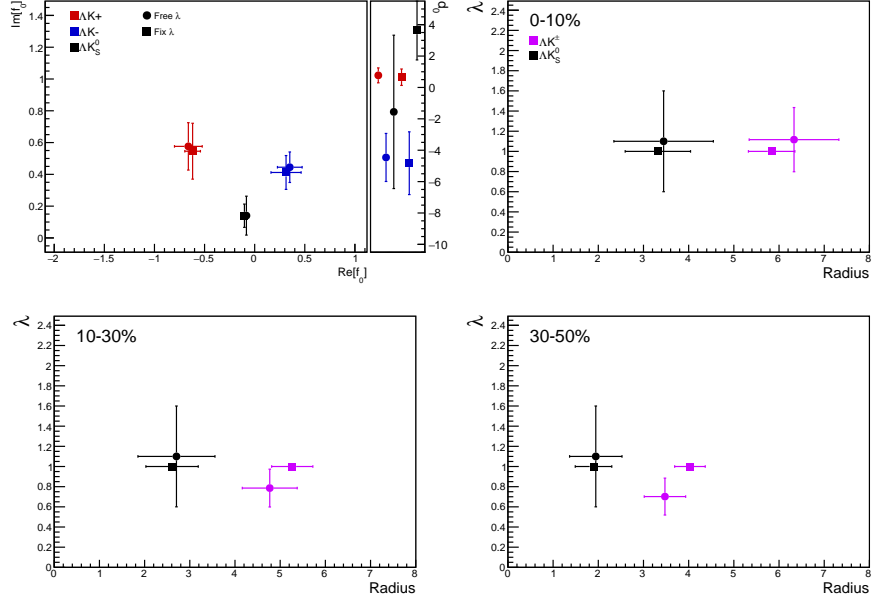
In Figure 1, we show extracted fit parameters for the case of  $\Lambda K^+(\bar{\Lambda} K^-)$  sharing radii with  $\Lambda K^-(\bar{\Lambda} K^+)$ . The figure shows results for three different treatments of the non-femtoscopic background: a polynomial fit to THERMINATOR 2 simulation to model the background (circles), a linear fit to the data to model the background (squares), and the Stavinsky method (crosses).



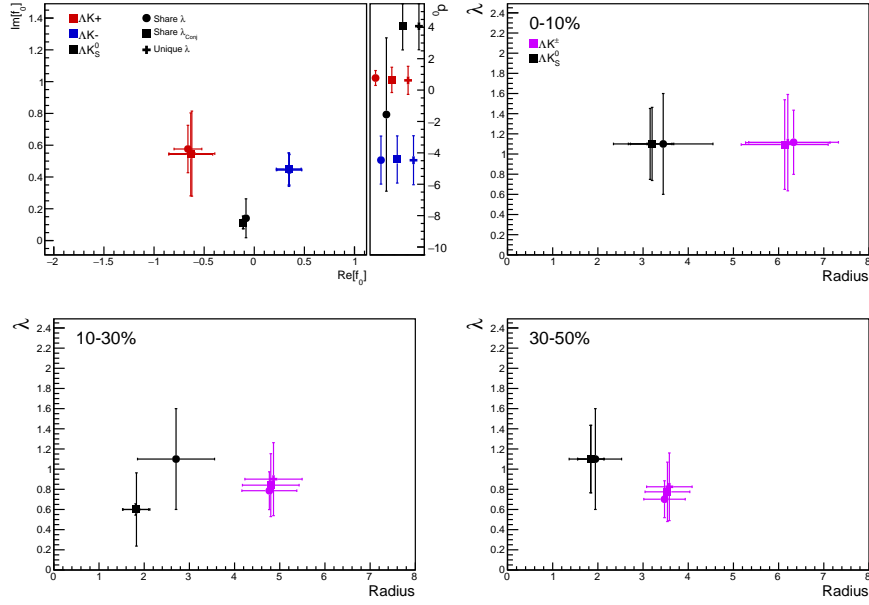
**Fig. 1:** Compare Fit Parameters: Background treatment: Extracted fit results for all of our  $\Lambda(\bar{\Lambda})K^\pm$  systems across all studied centrality bins (0-10%, 10-30%, 30-50%). The  $\Lambda K^+(\bar{\Lambda} K^-)$  and  $\Lambda K^-(\bar{\Lambda} K^+)$  systems share both a radius and a  $\lambda$  parameter for each centrality bin (i.e. 3 total radius parameters, 3 total  $\lambda$  parameters). The figure shows results for three different treatments of the non-femtoscopic background: a polynomial fit to THERMINATOR 2 simulation to model the background (circles), a linear fit to the data to model the background (squares), and the Stavinsky method (crosses). The green [?] and yellow [?] points show theoretical predictions made using chiral perturbation theory.



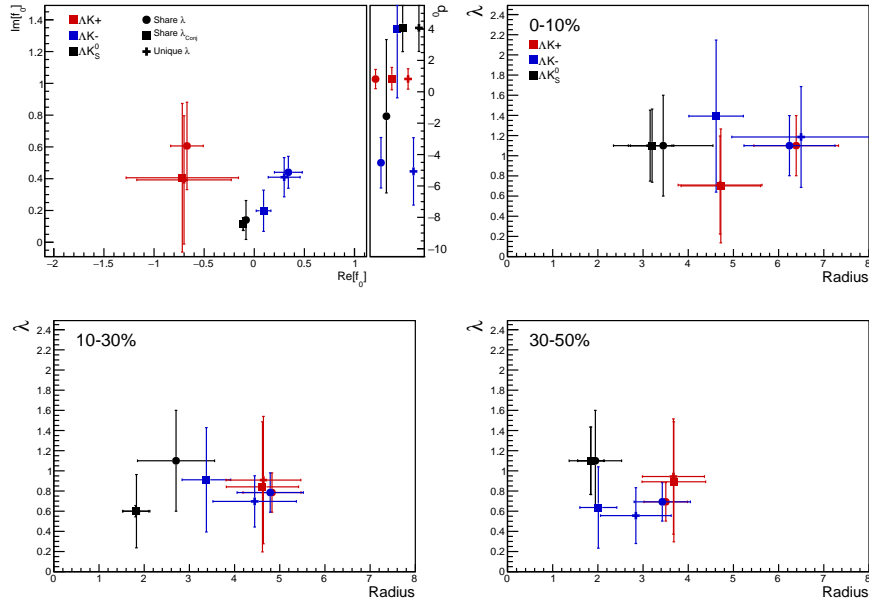
**Fig. 2:** Compare Fit Parameters: Number of residuals: Results shown for the case of 3 (+), 10 (X), and no (circles) residual contributors.



**Fig. 3:** Compare Fit Parameters: Free vs fixed  $\lambda$ : Results shown for  $\lambda$  parameters left free (filled symbols) and fixed to 1 (open symbols). In the top plot (3a), the  $\Lambda K^+$  and  $\Lambda K^-$  analyses share radii, whereas in the bottom (3b) they have unique radii.

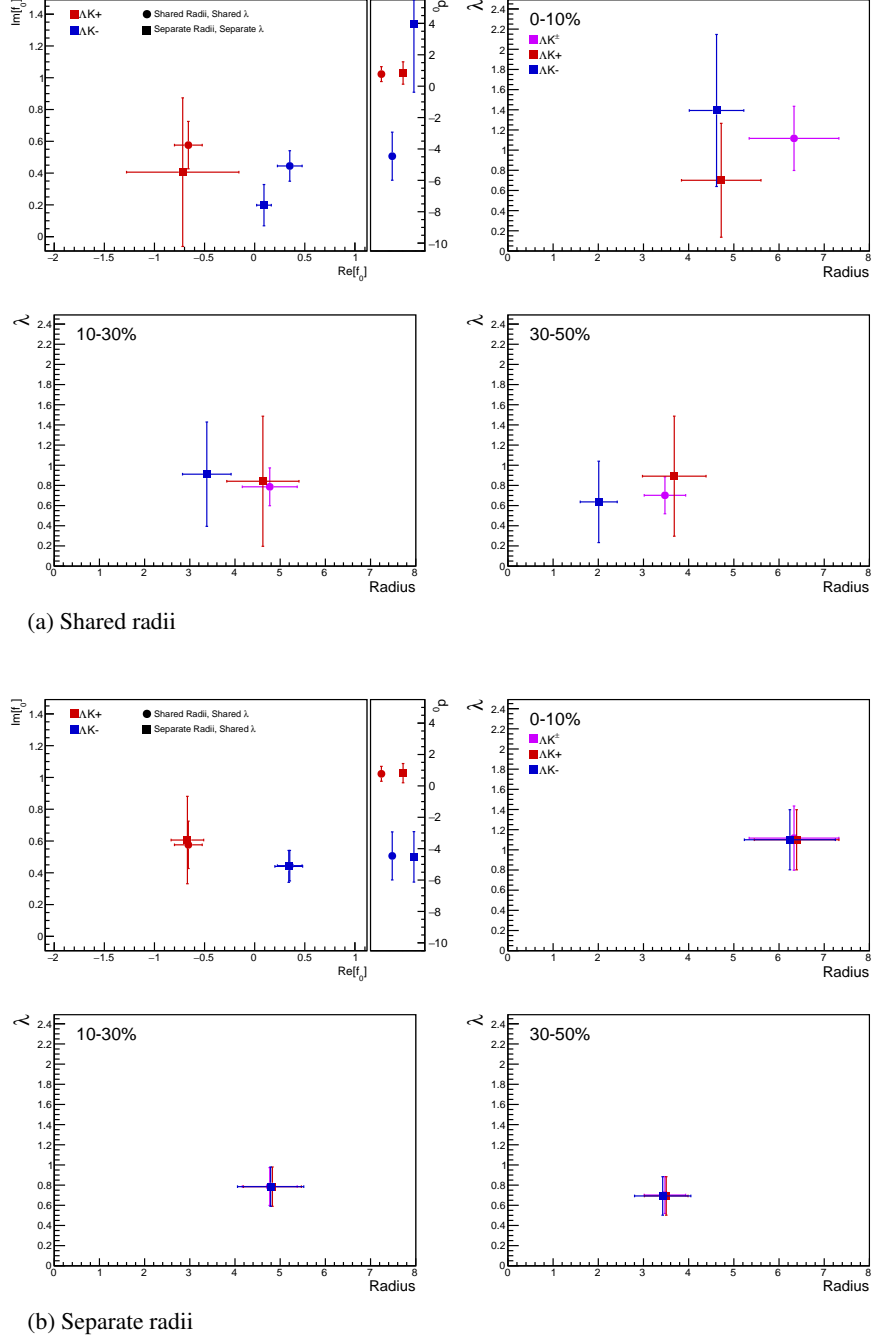


(a) Shared radii



(b) Separate radii

**Fig. 4:** Compare Fit Parameters: Shared vs unique  $\lambda$ : Results shown for different sharing of the  $\lambda$  parameters between analyses and systems. In the top (4a), the  $\Lambda K^+$  and  $\Lambda K^-$  analyses share radii, whereas in the bottom (4b), they do not. “Share  $\lambda$ ” (circles) is the case where a single  $\lambda$  is shared amongst all analyses for a given centrality bin (i.e., in 4a, 3 radius parameters and 3  $\lambda$  parameters). “Share  $\lambda_{conj}$ ” (squares) means that conjugate pairs (ex.  $\Lambda K^+$  and  $\bar{\Lambda} K^-$ ) share a  $\lambda$  parameter for each centrality. This corresponds to 6 total  $\lambda$  parameters (for each of the 3 centrality bins, the  $\Lambda K^+$  ( $\bar{\Lambda} K^-$ ) receives a unique  $\lambda$ , as does  $\Lambda K^-$  ( $\bar{\Lambda} K^+$ )). Finally, in “Unique  $\lambda$ ” (+), each analysis received its own unique  $\lambda$  parameter. This corresponds to 12  $\lambda$  parameters (for each of the 3 centrality bins, each  $\Lambda K^+$ ,  $\bar{\Lambda} K^-$ ,  $\Lambda K^-$ , and  $\bar{\Lambda} K^+$  receives a unique  $\lambda$ ).



**Fig. 5:** Compare Fit Parameters: Shared vs. Separate Radii: Results shown for the case of radii being shared between  $\Lambda K^+$  and  $\Lambda K^-$  (circles) vs not shared (squares). In (a), when the radii are not shared between  $\Lambda K^+$  and  $\Lambda K^-$ , neither are the  $\lambda$  parameters. In (b), the  $\lambda$  parameters are always shared between  $\Lambda K^+$  and  $\Lambda K^-$