0.0.1 Results: ΛK^0_S and $\Lambda K^{\pm}$: 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).

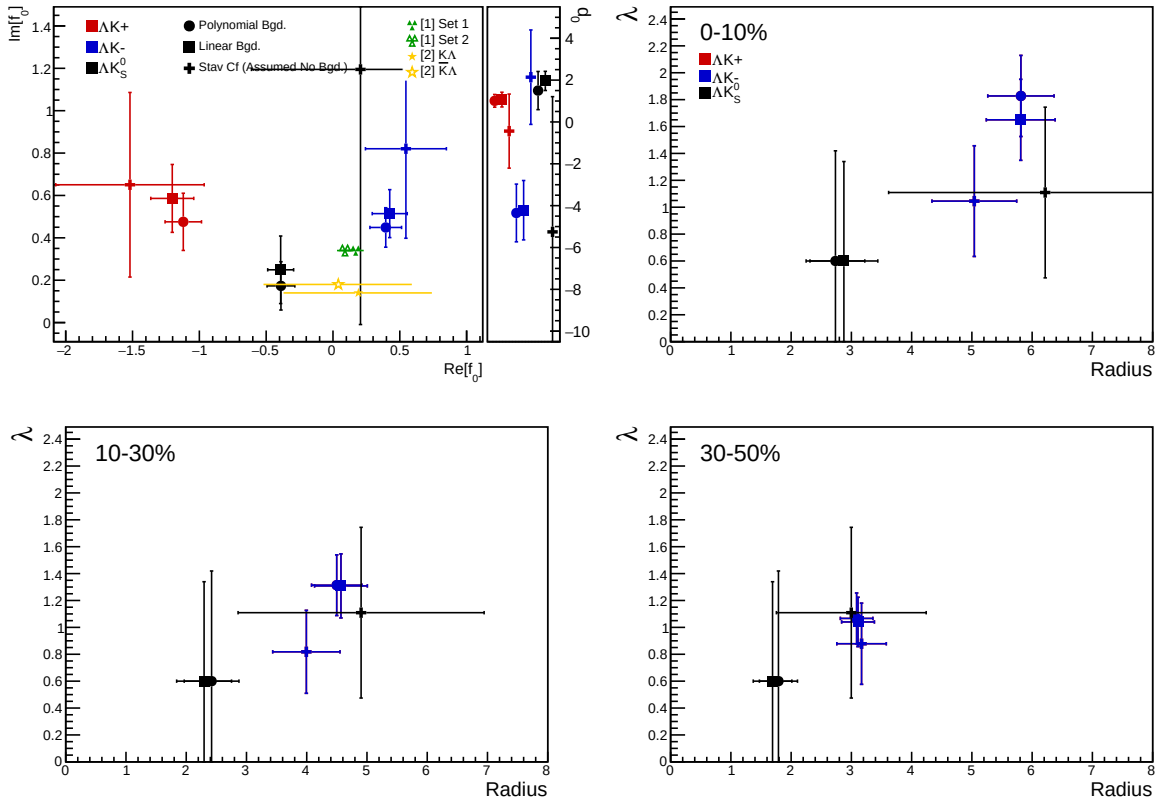


Fig. 1: Compare Fit Parameters: Background treatment: Extracted fit results for all of our $\Lambda(\bar{\Lambda})K^{\pm}$ systems across all studied centrality bins (0-10%, 10-30%, 30-50%). The $\Lambda K^+(\bar{\Lambda}K^-)$ and $\Lambda K^-(\bar{\Lambda}K^+)$ systems share both a radius and a λ parameter for each centrality bin (i.e. 3 total radius parameters, 3 total λ 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.

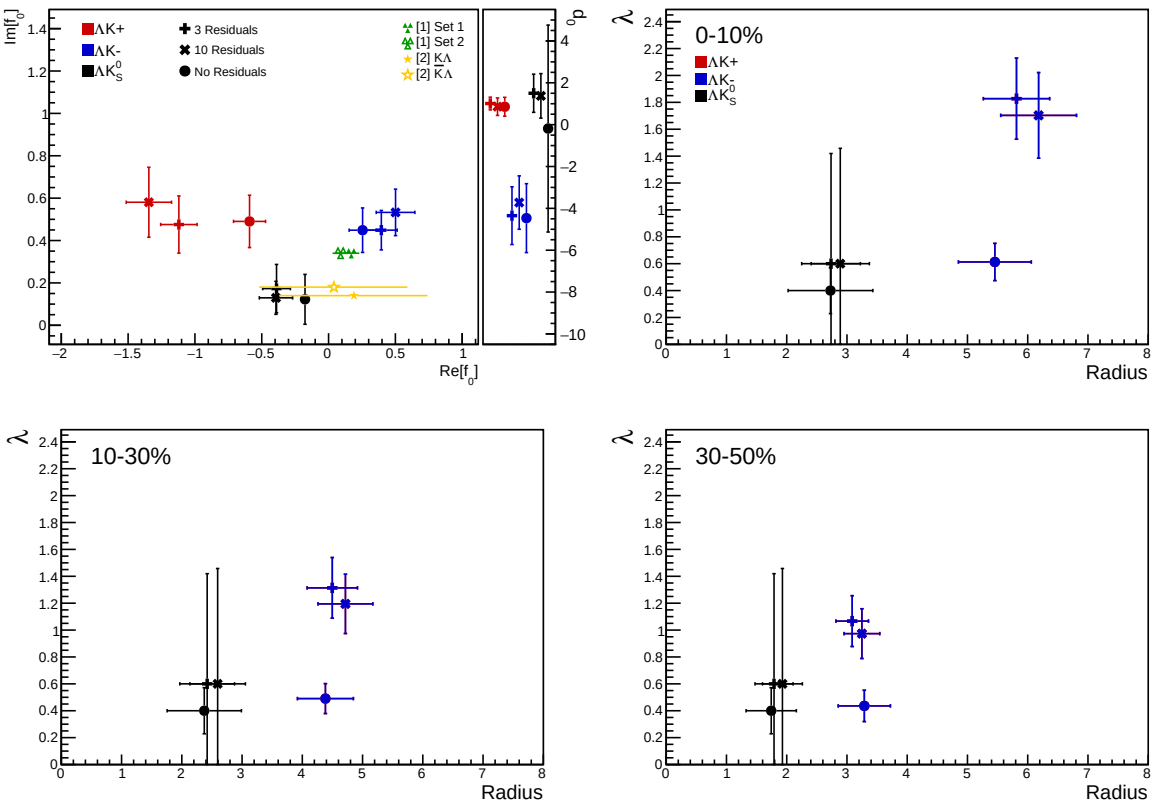
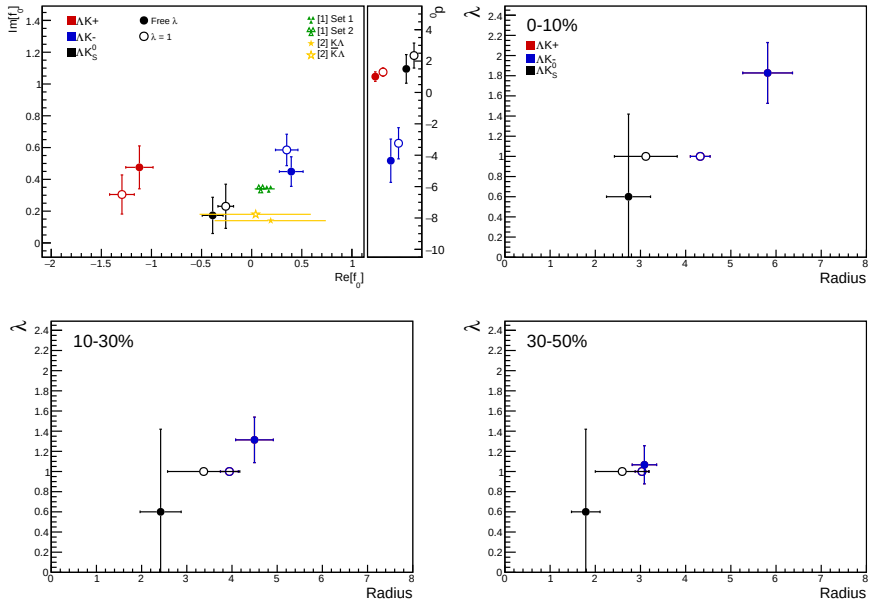
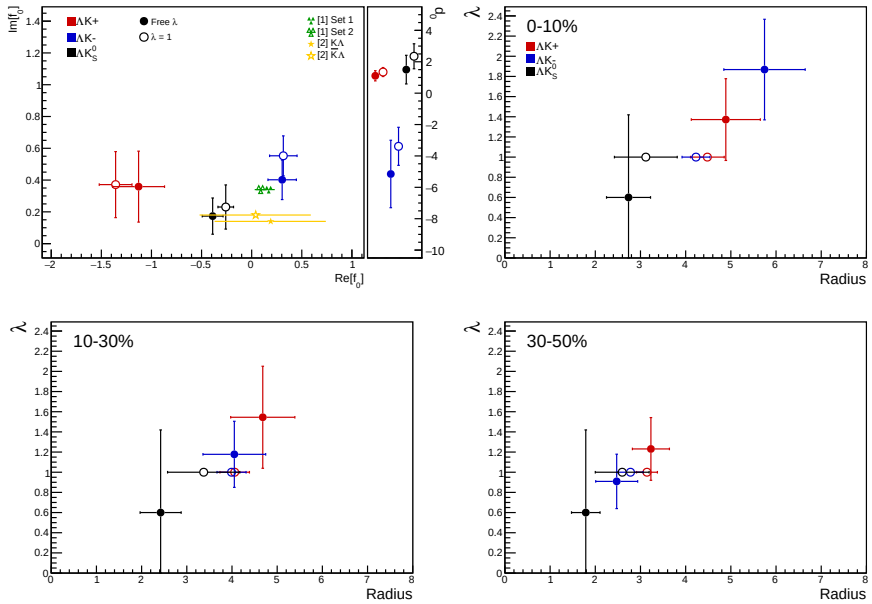


Fig. 2: Compare Fit Parameters: Number of residuals: Results shown for the case of 3 (+), 10 (X), and no (circles) residual contributors.

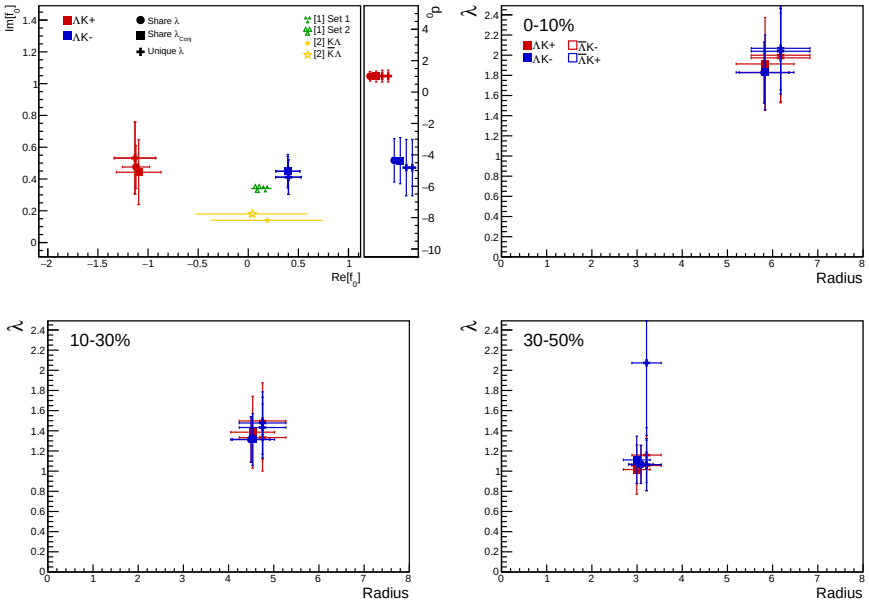


(a) Shared radii

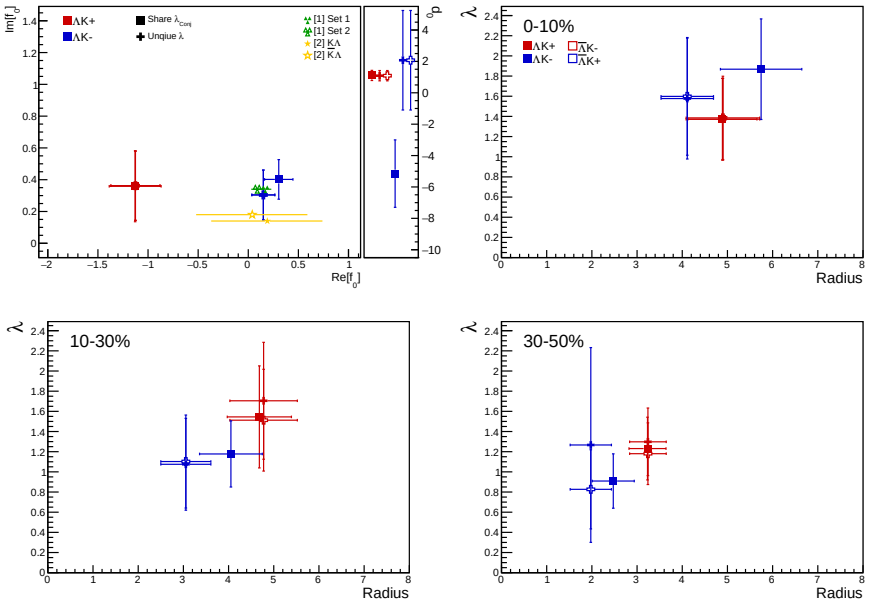


(b) Separate radii

Fig. 3: Compare Fit Parameters: Free vs fixed λ: Results shown for λ parameters left free (filled symbols) and fixed to 1 (open symbols). In the top plot (3a), the ΛK^+ and ΛK^- 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 λ: Results shown for different sharing of the λ parameters between analyses and systems. In the top (4a), the ΛK^+ and ΛK^- analyses share radii, whereas in the bottom (4b), they do not. "Share λ" (circles) is the case where a single λ is shared amongst all analyses for a given centrality bin (i.e., in 4a, 3 radius parameters and 3 λ parameters). "Share λ_{Conj}" (squares) means that conjugate pairs (ex. ΛK^+ and $\bar{\Lambda} K^-$) share a λ parameter for each centrality. This corresponds to 6 total λ parameters (for each of the 3 centrality bins, the $\Lambda K^+(\bar{\Lambda} K^-)$ receives a unique λ, as does $\Lambda K^-(\bar{\Lambda} K^+)$). Finally, in "Unique λ" (+), each analysis received its own unique λ parameter. This corresponds to 12 λ parameters (for each of the 3 centrality bins, each ΛK^+, $\bar{\Lambda} K^-$, ΛK^-, and $\bar{\Lambda} K^+$ receives a unique λ).

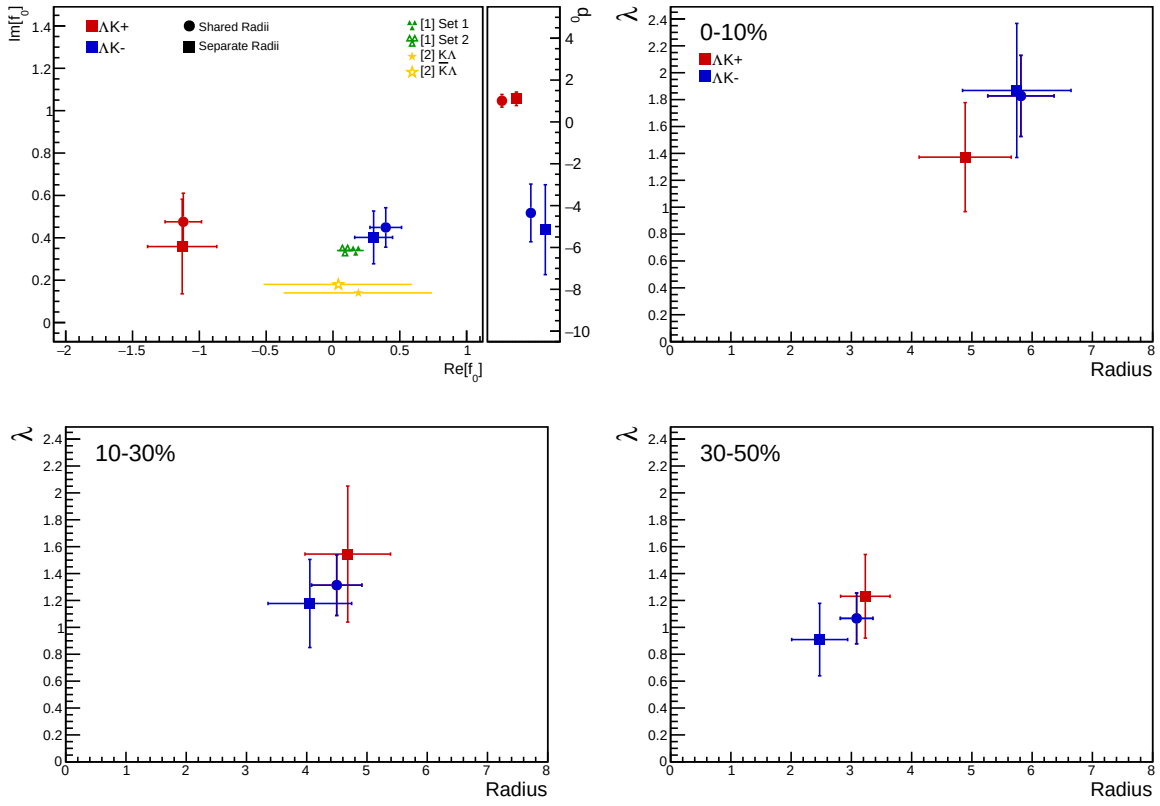


Fig. 5: Compare Fit Parameters: Shared vs. Separate Radii: Results shown for the case of radii being shared between $\Lambda K^+(\bar{\Lambda}K^-)$ and $\Lambda K^-(\bar{\Lambda}K^+)$ (circles) vs not shared (squares).