### 0.1 Typical Correlation Function Construction

In practice, $B(k^*)$ is typically obtained by forming mixed-event pairs, i.e. particles from a given event are paired with particles from $N_{mix}(= 5)$ other events, and these pairs are then binned in $k^*$. In forming the background distribution, it is important to mix only similar events; mixing events with different phase-spaces can result in an unreliable background distribution, and can introduce artificial signals in the correlation function. Therefore, in this analysis, we bin our events both in primary vertex location (2 cm bin width) and in centrality (5% bin width), and we only mix events within a given bin; i.e. we only mix events of like centrality and of like primary vertex location. Also note, a vertex correction is also applied to each event, which essentially recenters the the primary vertices to z = 0.

Figures 1, 2, 3 show the correlation functions for all centralities studied for $\Lambda K^+(\bar{\Lambda}K^-)$, $\Lambda K^-(\bar{\Lambda}K^+)$, and $\Lambda(\bar{\Lambda})K^0_S$, respectively. All were normalized in the range $0.32 < k^* < 0.4$ GeV/$c$. It is interesting to note that the average of the $\Lambda K^+(\bar{\Lambda}K^-)$ and $\Lambda K^-(\bar{\Lambda}K^+)$ correlation functions is consistent with our $\Lambda K^0_S(\bar{\Lambda}K^0_S)$ measurement.

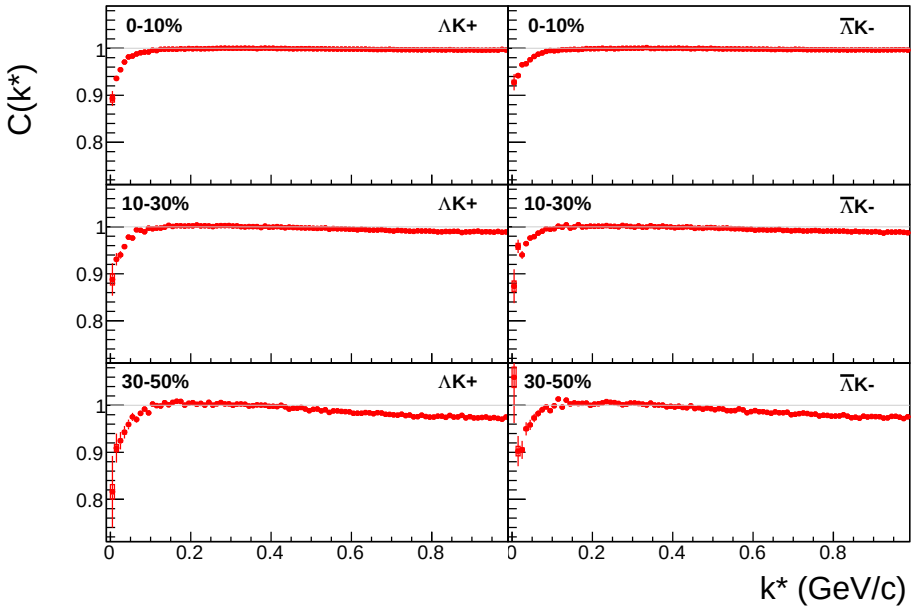


**Fig. 1:** $\Lambda K^+$ (left) and $\bar{\Lambda}K^-$ (right) correlations for 0-10% (top), 10-30%(middle), and 30-50%(bottom) centralities.

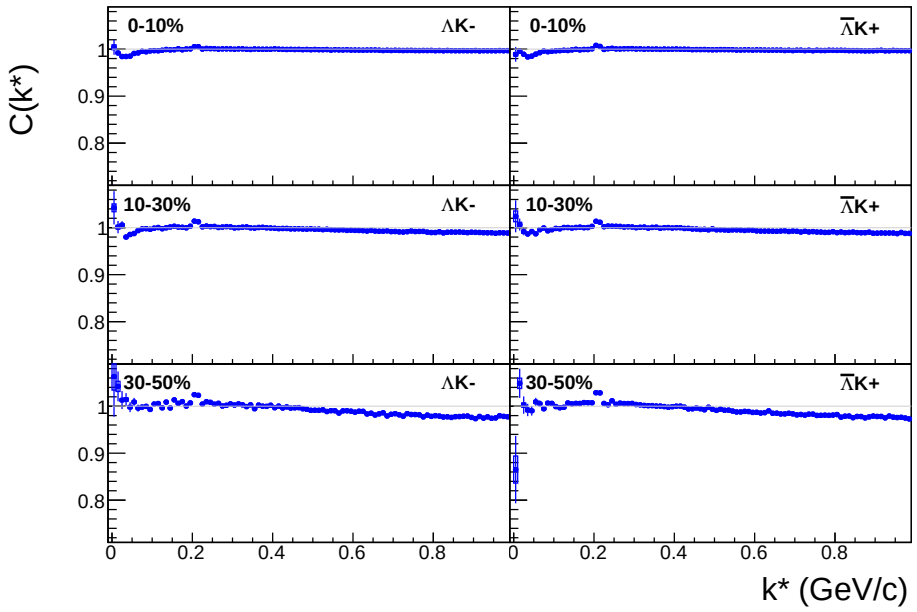


**Fig. 2:** $\Lambda K^-$ (left) and $\bar{\Lambda}K^+$ (right) correlations for 0-10% (top), 10-30%(middle), and 30-50%(bottom) centralities. The peak at $k^* \approx 0.2$ GeV/c is due to the $\Omega^-$ (and, to a much smaller extent, the $\Xi(1690)$ resonances.

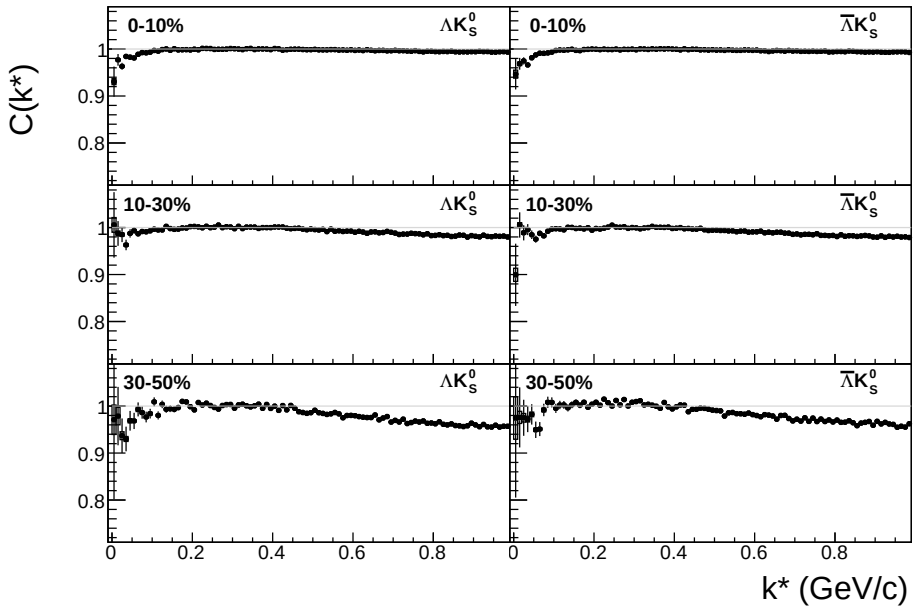


**Fig. 3:** $\Lambda K^0_S$ (left) and $\bar{\Lambda}K^0_S$ (right) correlations for 0-10% (top), 10-30%(middle), and 30-50%(bottom) centralities.

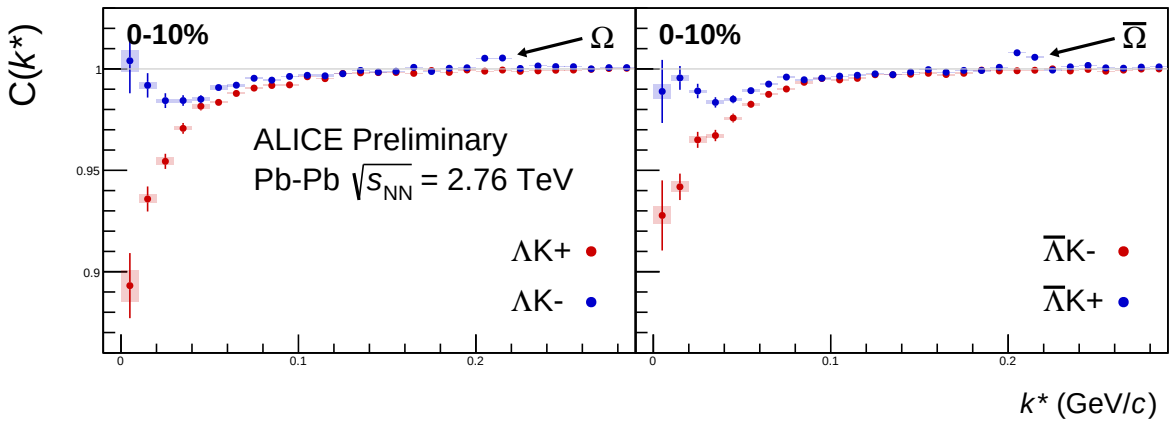


**Fig. 4:** Correlation Functions: $\Lambda K^+$ vs $\Lambda K^-$ ($\bar{\Lambda} K^+$ vs $\bar{\Lambda} K^-$) for 0-10% centrality. The peak in $\Lambda K^-$($\bar{\Lambda} K^+$) at $k^* \approx 0.2$ GeV/c is due to the $\Omega^-$ (and, to a much smaller extent, the $\Xi(1690)$ resonance. The lines represent the statistical errors, while boxes represent systematic errors.