1 Spherical Harmonics

This appendix shows a spherical harmonic decomposition of our ΛK^0_S correlation functions. For our purposes, the most interesting components are C_{00} and $\Re C_{11}$, which are presented in Figures 1.1 - 1.3. In each of the figures, the left column shows C_{00}, the right column $\Re C_{11}$, and the rows separate the centrality bins. For the the 0-10% bin, results are also included from a THERMINATOR 2 simulation for an impact parameter $b = 2$ fm (gold stars) and assumed scattering parameters ($\Re f_0$, $\Im f_0$, d_0) = (-1.16, 0.51, 1.08), (0.41, 0.47, -4.89), and (-0.41, 0.20, 2.08) for the ΛK^+, ΛK^-, and ΛK^0_S systems, respectively. The coefficient C_{00} quantifies the overall angle-integrated strength of the correlation function, similar to that studied in our 1D analysis. The $\Re C_{11}$ term is sensitive to the asymmetry in the outward direction, a component interesting for non-identical particle studies. In our analysis, we have taken the Λ to be the first particle in our pairs, and a negative value of $\Re C_{11}$ signifies the Λ particles are emitted, on average, further out and/or earlier than the K mesons. For completeness, the first six components of the spherical harmonic decompositions are shown in Figures 1.4 - 1.6

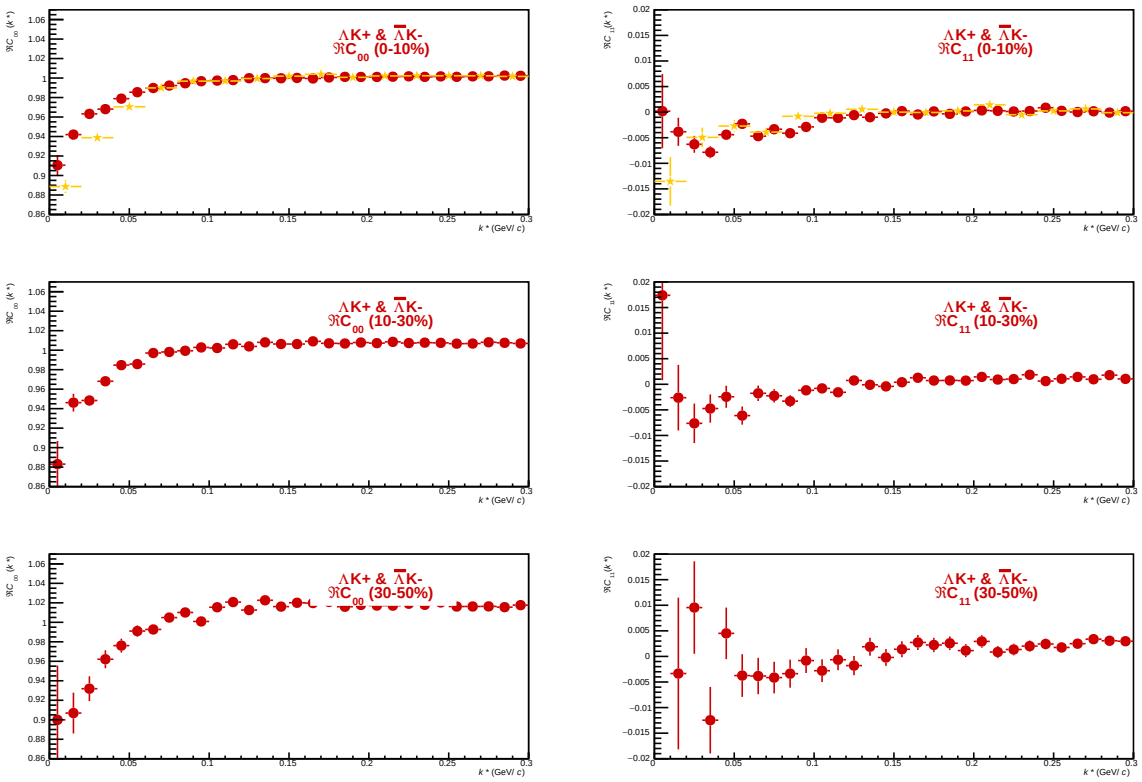


Fig. 1: C_{00} (left) and $\Re C_{11}$ (right) components of a spherical harmonic decomposition of the ΛK^+ correlation function for the 0-10% (top), 10-30% (middle), and 30-50% (bottom) centrality bins. For the the 0-10% bin, results are also included from a THERMINATOR 2 simulation for an impact parameter $b = 2$ fm (gold stars) and assumed scattering parameters ($\Re f_0$, $\Im f_0$, d_0) = (-1.16, 0.51, 1.08).

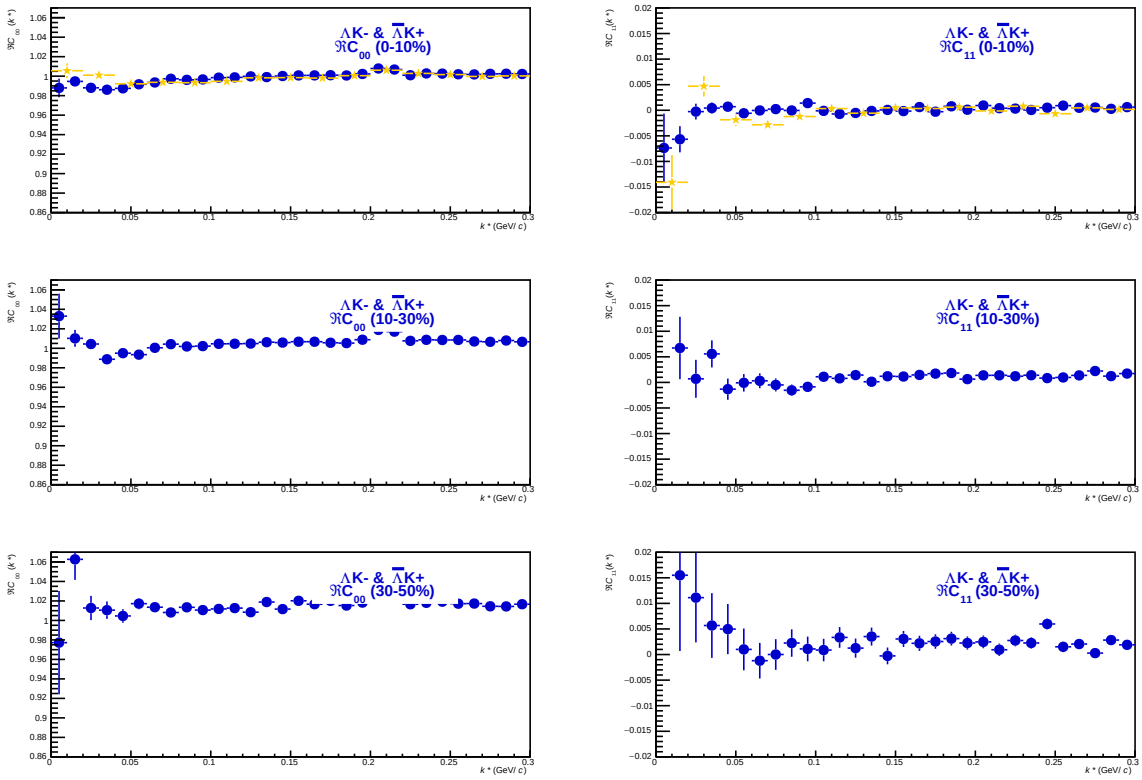


Fig. 2: C_{00} (left) and $\Re C_{11}$ (right) components of a spherical harmonic decomposition of the ΛK^- correlation function for the 0-10% (top), 10-30% (middle), and 30-50% (bottom) centrality bins. For the the 0-10% bin, results are also included from a THERMINATOR 2 simulation for an impact parameter $b = 2$ fm (gold stars) and assumed scattering parameters ($\Re f_0$, $\Im f_0$, d_0) = (0.41, 0.47, -4.89).

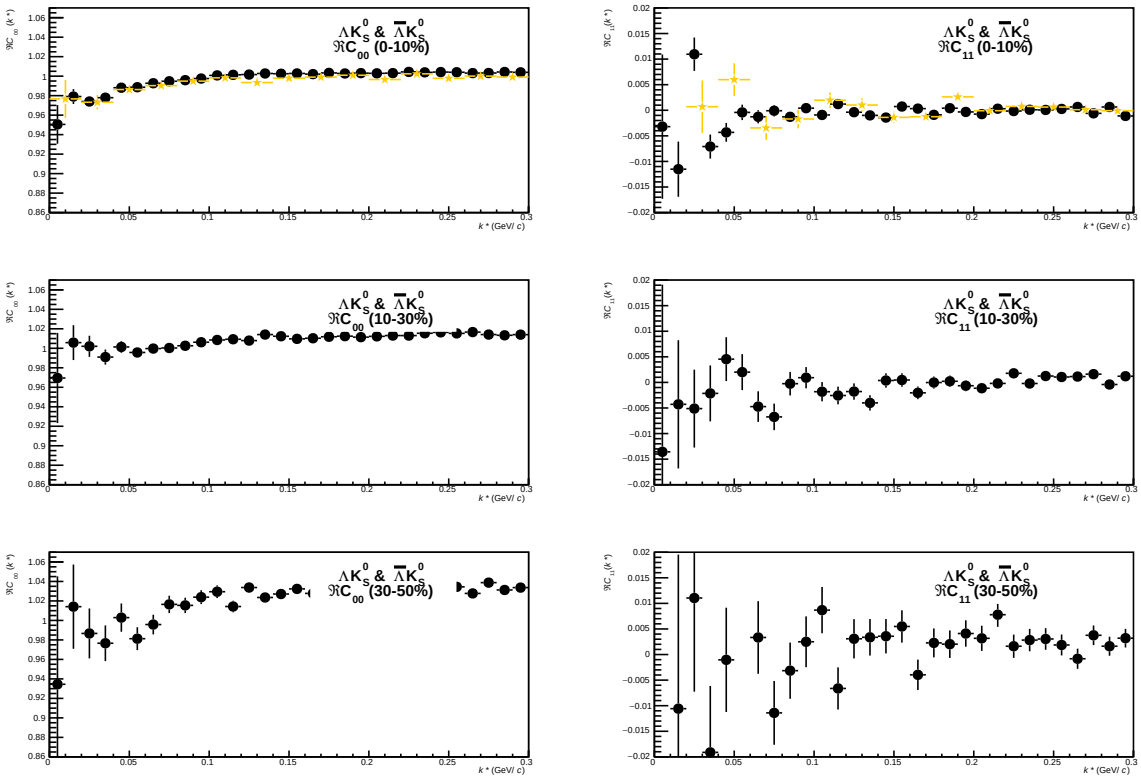
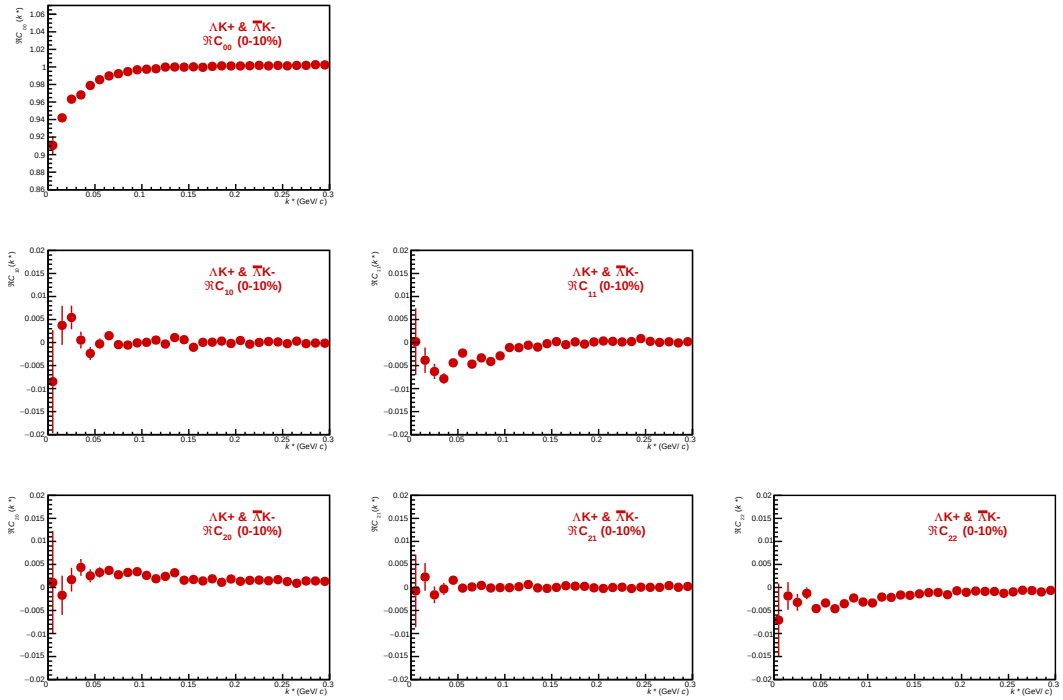
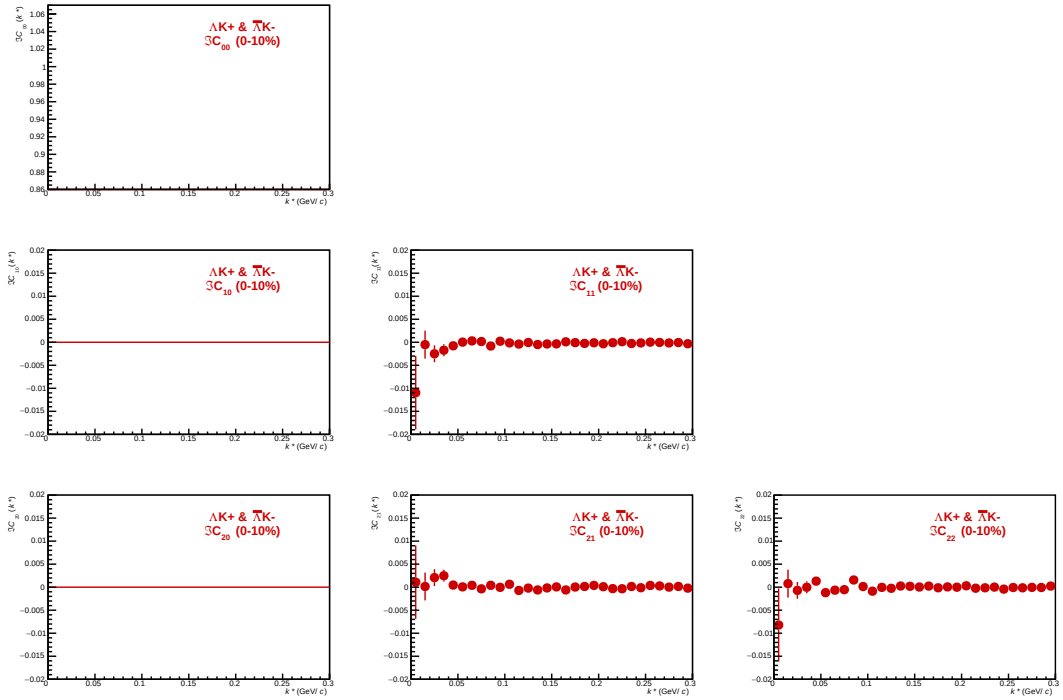


Fig. 3: C_{00} (left) and $\Re C_{11}$ (right) components of a spherical harmonic decomposition of the ΛK^0_S correlation function for the 0-10% (top), 10-30% (middle), and 30-50% (bottom) centrality bins. For the the 0-10% bin, results are also included from a THERMINATOR 2 simulation for an impact parameter $b = 2$ fm (gold stars) and assumed scattering parameters ($\Re f_0$, $\Im f_0$, d_0) = (-0.41, 0.20, 2.08).

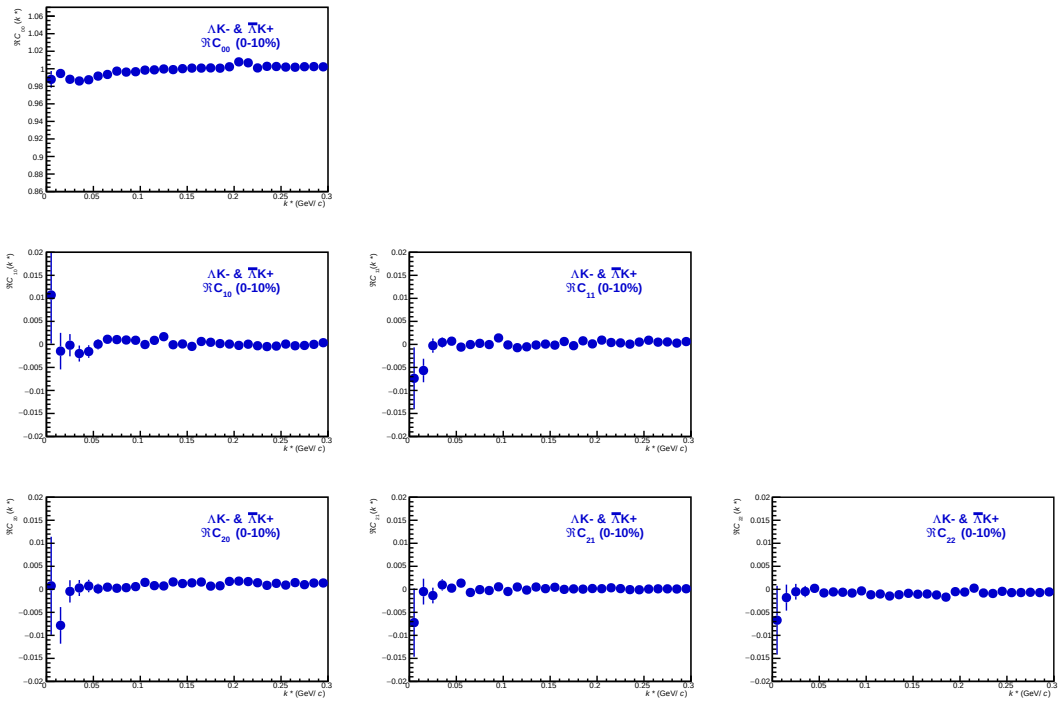


(a) Real components, $\Re C_{lm}$

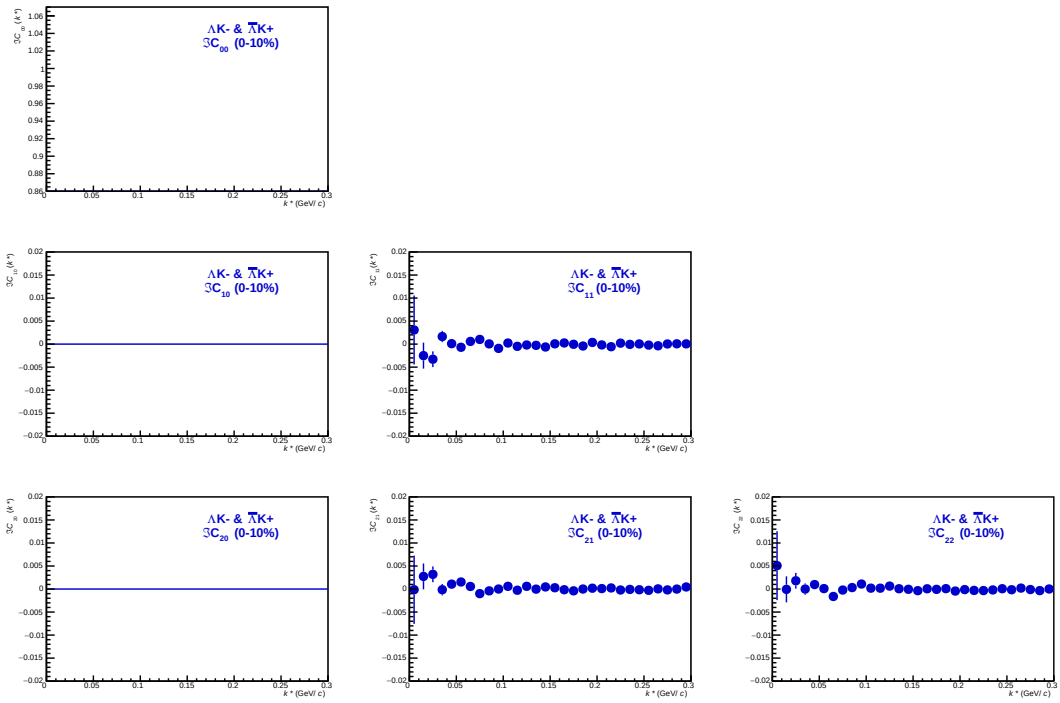


(b) Imaginary components, $\Im C_{lm}$

Fig. 4: First six components ($C_{00}, C_{10}, C_{11}, C_{20}, C_{21}, C_{22}$) of the spherical harmonic decomposition of the ΛK^+ correlation function for the 0-10% centrality bin. Note, $\Im C_{00}$, $\Im C_{10}$, and $\Im C_{20}$ are zero by definition.

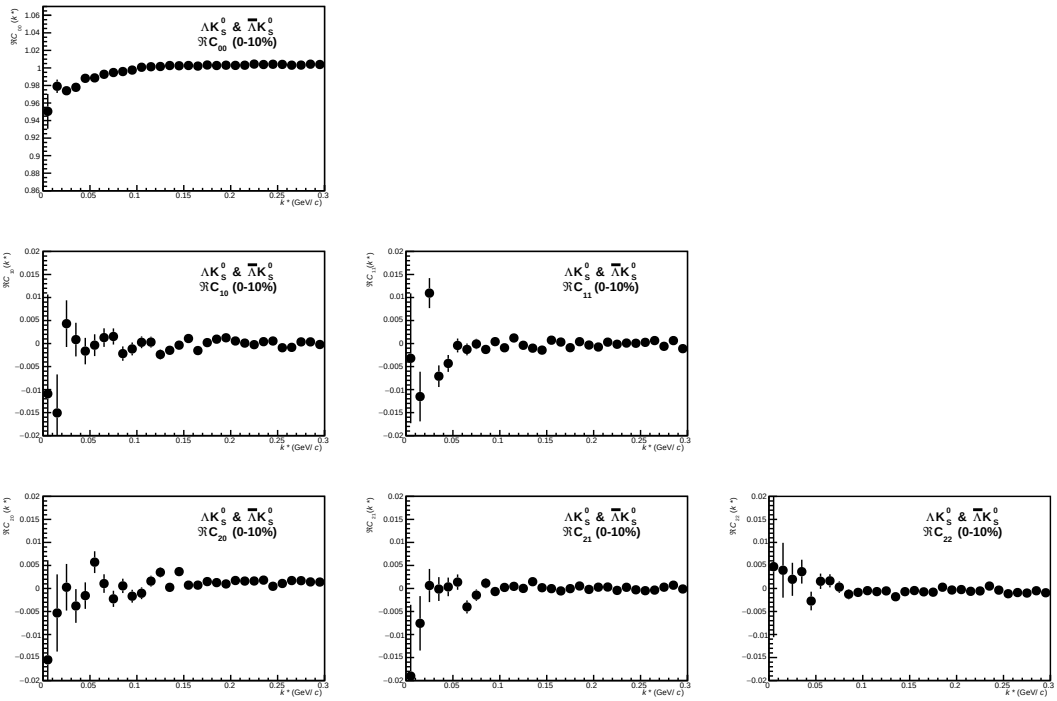


(a) Real components, $\Re C_{lm}$

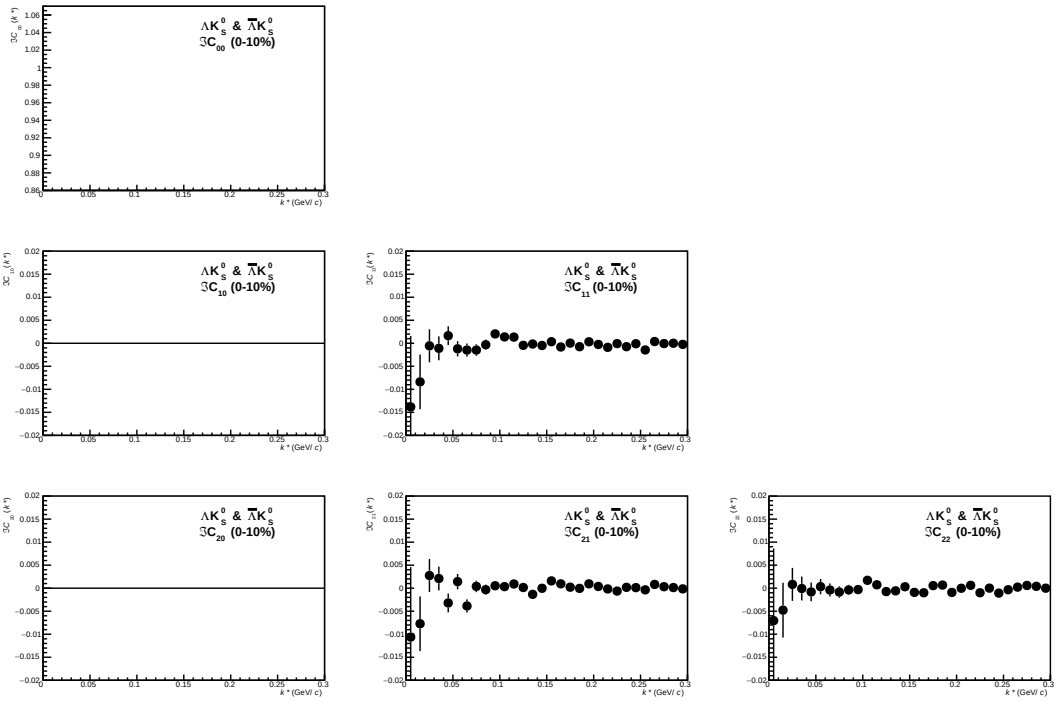


(b) Imaginary components, $\Im C_{lm}$

Fig. 5: First six components ($C_{00}, C_{10}, C_{11}, C_{20}, C_{21}, C_{22}$) of the spherical harmonic decomposition of the ΛK^- correlation function for the 0-10% centrality bin. Note, $\Im C_{00}$, $\Im C_{10}$, and $\Im C_{20}$ are zero by definition.



(a) Real components, $\Re C_{lm}$



(b) Imaginary components, $\Im C_{lm}$

Fig. 6: First six components ($C_{00}, C_{10}, C_{11}, C_{20}, C_{21}, C_{22}$) of the spherical harmonic decomposition of the ΛK^0_S correlation function for the 0-10% centrality bin. Note, $\Im C_{00}$, $\Im C_{10}$, and $\Im C_{20}$ are zero by definition.