

Strange particles femtoscopy in PbPb collisions with CMS detector

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The two-particle correlations as a function of relative momenta of identified hadrons involving K_S^0 and $\Lambda/\bar{\Lambda}$ are measured in PbPb collision at $\sqrt{s_{NN}} = 5.02$ TeV with the data samples collected by the CMS experiment at the LHC. Such correlations are sensitive to quantum statistics and possible final state interactions between the particles. The shape of the correlation function is observed to vary largely for different particle pairs, revealing the effect of the strong final state interaction in each case. The source radii are extracted from $K_S^0 K_S^0$ correlations in different centrality regions and found to decrease from central to peripheral collisions. The strong interaction scattering parameters are extracted from $K_S^0 K_S^0$, $\Lambda K_S^0 \oplus \bar{\Lambda} K_S^0$, $\Lambda\Lambda \oplus \bar{\Lambda}\bar{\Lambda}$ and $\Lambda\bar{\Lambda}$ correlations using the Lednicky-Lyuboshits model, and compared with other experimental and theoretical results. The scattering parameters indicate that the $\Lambda\Lambda \oplus \bar{\Lambda}\bar{\Lambda}$ is attractive and that the $\Lambda K_S^0 \oplus \bar{\Lambda} K_S^0$ interaction is repulsive.

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