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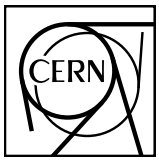

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Baryon-antibaryon ($p\bar{p}$, $p\bar{\Lambda}$, $\bar{p}\Lambda$) femtoscopic correlations in Pb–Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 2.76$ TeV

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Abstract

Here goes your abstract

1 Introduction

In the analysis, we present the measurements of baryon-antibaryon correlations in Pb–Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 2.76$ TeV registered by the ALICE experiment. The method of two-particle correlations (commonly referred to as *femtoscopy*) allows for extracting the space-time characteristics of the emitting source created in heavy-ion collision. Using this technique one can also attempt to extract paramters of strong interaction [1].

2 Data analysis

2.1 Data sample

2.1.1 Data selection

2.1.2 Monte Carlo

2.2 Event selection

2.3 Particle identification

2.3.1 (Anti-)protons identification

2.3.2 (Anti-)lambdas identification

2.4 Track selection

2.5 Pair selection

2.6 Proton and lambda fraction with respect to their origin

In order to estimate fraction of protons and lambdas as a MC Hijing LHC12a17a fix Fractions checked before and after reconstruction Kinematic cuts the same as in data Before reconstruction significant contribution of protons at low p_T with PDG of mothers corresponding to π, K^0_L, K^0_S, K^+, D^+_S, J/ψ, B^0, B^+, B^0_S - coming from interactions with material? Cross-check with Therminator2 (no reconstruction!)

3 Results

3.1 Correlation functions

3.2 Fitting procedure

3.2.1 $\mathrm{p\bar{p}}$ *theoretical function*

3.3 Systematic uncertainties

- non-femtoscopic background
- fractions (Hijing vs. Therminator)
- number of secondaries from material
- momentum resolution correction
- ALICE magnetic fields ++ vs. - -
- PID
- different scenarios for interaction parameters
- DCA templates

– $p\bar{\Lambda}$ vs. $\bar{p}\Lambda$

– fitting procedure

3.3.1 Momentum resolution

Correction for momentum resolution is taken into account in the fitting procedure. Fit function is smeared with a gaussian function with the width corresponding the momentum resolution for the pairs of interest. Following formula is used:

$$C_c(q_c) = \int_{-3\sigma}^{+3\sigma} C_{th}(q_c - q) Gaus(q_t, \sigma)(q) |q_c - q|^2 dq, \quad (1)$$

where C_c is the corrected function, C_{th} is the ideal function, σ is the momentum resolution.

References

[1] A. Kisiel, H. Zbroszczyk, and M. Szymanski, "Extracting baryon-antibaryon strong interaction potentials from $p\bar{\Lambda}$ femtoscopic correlation function", *Phys. Rev.* **C89** (2014) 054916, arXiv:1403.0433 [nucl-th].