Thank you very much for your thorough review of our work. I greatly appreciate the time you took to complete this. I apologize for the delay in addressing these comments, and thank you for your patience. I will submit, together with the new draft, a document highlighting the changes made to the text. Much effort was also spent in cleaning up the figures, but these changes are not included in that document. Please contact me or Tom if you have any questions or additional comments. Thanks again.

Cheers,
Jesse

Dear PC members

Thank you for this nicely written draft and for these interesting results. In this draft (2019-08-28-lamkpublication_v6) the results of the first measurement of the scattering parameters of ΛK (ΛK^+, ΛK^- and ΛK^0_S) pairs in Pb-Pb collisions at $\sqrt{s_{NN}}$ = 2.76 TV, obtained by a femtoscopic analysis of ΛK correlation are presented. The used method, the analysis and the results are clearly described.

In the following some general questions or comments:

1) It is not clear what criteria have been used for the determination of the cut on DCA. For Kaons transverse DCA and longitudinal DCA to primary vertex should be smaller than 2.4 and 3.0 cm, respectively. For Lambda and K 0s the DCA should be lower than 0.5 and 0.3 cm, respectively. Why this so large difference between the V0 and the Kaon track?
   These are standard cuts used in various other studies. See, for example, https://arxiv.org/abs/1506.07884v2 and https://arxiv.org/pdf/1903.06149v1.pdf

2) Line 128 and 133. Why the invariant mass cut to eliminate mis-indentified K0S and Lambda are equal? In strangeness analyses they are different, the one for mis-indentified Lambda is about 5 MeV/c^2.
   The purpose of the 9.0 MeV/c^2 cut is simply to save computing time/power. This cut is applied first so we do not waste time applying the misidentification cuts to candidates which are certainly not misidentified. The important cuts in the misidentification procedure are bullet points 2 and 3. Adjusting the exact value of cut 1 (i.e. the 9.0 MeV/c^2 cut) does not have any significant effect on the misidentification procedure.

3) Fig.2: Comparing the labels in Fig.2, the figure caption and the corresponding text describing this figure, it is not straightforward to follow the differences between the various polynomial fits. The dashed curve is the fit with THERMINATOR, properly scaled to match the data, but then the last sentence in the figure caption refers to another polynomial fit (solid line)? In the label inside the plot this is called “ALICE bgd fit”, and in lines 322-323 it is said “fit polynomial scaled to match the data”. Could everything be described more clearly to avoid some misunderstanding?
   Caption, legend, and text have been adjusted to hopefully be more clear.

4) No uncertainty is quoted in Tab.4. Is really used enough statistics to have 3 significant digits?
   Yes, the amount of simulated data used does warrant such a precision.

5) Line 332. What criteria is used to determine the k* region of the normalization?
   The purpose of the lower bound of 0.32 GeV/c is to ensure that the determination of the background scale and shift factors occurs in a range outside of the femtoscopic signal region.

This also coincides with the lower bound of the correlation normalization region. The upper value of 0.80 GeV/c is to provide enough data for a quality fit. This value can be increased all the way up to the maximum range of recorded data, 2.0 GeV/c, without changing the results.

6) In Fig. 2 and Fig.3 you use the same notation for the vertical axis, i.e. C(k*). Probably the one of Fig.2 is $C(k^*_{\Lambda K})$, while the one in Fig.3 is C_fit(k*) described in eq. 13. Probably you need to use a different notation for the two plots and/or to spend some more words in the caption of the Figures.
Both of the figures show the same experimental correlation functions, as the filled and colored data points. Figure 2 shows the data out to a larger k* value, and also with a smaller range in the y-axis to enhance the view of the background. Therefore, it would be confusing for these figures to differ in their labels. The different fits shown in each figure are described in the legend. Also, $k^*_{\Lambda K}$ is implied since we are looking at the ΛK system.

For consistency, and to avoid confusion, the any entry in the legends of Figures 2 and 3 has been changed as follow:
Figure 2: ALICE Bgd. Fit → Scaled Bgd. Fit
Figure 3: Non-femto. bgd. → Scaled Bgd. Fit

7) You describe with high accuracy how the systematic uncertainties are estimated. However you don't quote in any part these systematic uncertainties. You should discuss how large are the systematic uncertainties and what of the performed variations gives the largest contribution.
This would be very difficult to fit compactly into a single table. The main contributors to the systematic errors on the extracted parameter sets are the fit methods (i.e. the k* fit range, modeling of the non-femtoscopic background, and the treatment of the residuals). A sentence has been added stating this point, and the table has been removed from the text.

8) Always about the systematics. You use a table (Table 5) to describe all the used cuts for the estimation of the systematic uncertainty. Probably these details could be avoided.
The table has been removed from the text.

9) No comment is done about the obtained d_0 values, reported in Fig. 4.
Comment added.

10) Fig.6: In the left plot the quantity reported on the vertical axis is called RC_00(K*), however in the caption and in the text (line 464) it is called C_00(K*). Is a symbol missing or is it correct like this?
C_00 only has a real component, so writing RC_00 is redundant, and has been changed in the figure to C_00.

11) Fig. C1: In the middle and lower plots the meaning of the vertical dashed lines is not reported
The dashed lines show the region where the Gaussian form was fit. This information has been added to the caption.

12) Fig. C3: Also here, similarly to Fig.6, the figure caption reports C_00 but a different symbol is used in the plot. Is that correct?
Corrected, as described above in 10.

Minor suggestions:

- ~~Line 207: Rf_0 is said twice.~~
- ~~Line 318: It is not clear the numerator of what fraction you speak~~
  numerator pairs → pairs in the signal distribution (although, most of this paragraph may be removed, as per the suggestion of another group).
- ~~Fig.1: Since the difference between dotted and dashed vertical lines is not clearly visible unless it is much zoomed in, one could also specify the colour to distinguish between the two, i.e. "vertical dotted (red) lines" and "vertical dashed (green) lines".~~
- ~~Fig. 2 There are some points that are in strange position or simply too high or too low for the existing scale. Please modify the figure.~~
- Fig. 2 The vertical line on the left of the scale is missing.
  I'm not sure what you mean?
- ~~References: In all the references there is the same inversion i.e. ," instead of ",~~

Best regards
Angela for the Catania Team