Comments/suggestions to
https://alice-publications.web.cern.ch/system/files/draft/5115/2019-05-17-lamkpublication_v3b.pdf

General comments:
The new background fits ad the combined fits of the particle-particle and anti-anti pairs do much improve the papers logic, although the extracted scattering parameters are not strongly modified.

Please include systematic errors for all the figures, since in some the latter are still missing .

Following the discussion about a possible correlation between the R parameter and the scattering parameters, considering looking at the correlation matrix and eventually mentioning the results with a short comment in the text.
I will work on this now.

L12: ‚allow for the' -> provide a good

line 60-61: I think it is good to have this part (Appendix. B) in the paper, but if for some reason you have to shorten the draft (in the far future), I also think this might be a good candidate to delete.

lines 131-144: Every time I read about shared daughter cut I am struggling to understand why is it needed when the cut was already performed for V0 candidates (lines 131-133). And then I realised that it is not for V0 candidates (K0 + Lambda together) but rather for specific sample of candidates so either K0 or Lambda candidates. So after applying cut from lines 131-133 you have unique Lambda candidate sample and unique K0 candidate sample (i.e. each candidate in the sample has a unique daughter). But you can still have daughter shared between 1 Lambda and 1 K0 candidate and therefore you have to apply shared daughter cut. Please, correct me, if I am wrong. If I am right I would somehow emphasize (if possible) that the former cut is only among specific V0 candidates - either Lambda or K0 candidates.
You are correct. I will try to make this more clear.

page 6, Tables 2 and 3: I have contacted the author of the code. He says the unit of DCA among daughters has been changed over passed years (from sigma to cm now). Apparently, if you use TPC only tracks (and use GetDcaV0Daughters() in AliESDv0) you should be fine, it is in cm. TPC+ITS tracks should still have DCA in sigmas.

lines 180-181: I am sorry, I am not femto expert so this one is probably some basic misunderstanding: "not binned in kT due to limited statistics" But the correlation function is constructed as function of k* - and there is no problem with statistics?
Binning in kT is not a replacement for the k* binning, but rather imposes an additional binning constraint. This procedure involves forming correlation functions similar to those shown in the paper, but only accepting pairs within a given kT bin. This paper on pions, for which statistics are not an issue, may help clear up some confusion: https://arxiv.org/pdf/1507.06842.pdf
Binning the correlation functions in kT shows that the radii fall with increasing kT due to the collective nature of the system. This fact is well established, so trying to stretch our statistics to reinforce the observed trend isn't really worthwhile.

lines 182-183: "two magnetic field configurations (++ and --)" - by two fields you mean from L3 and

dipole magnets? But dipole is not relevant for this analysis. I am thinking how this could look like to non-ALICE people - will they understand?
The polarity of the L3 magnet is reversed. I will try to make this less confusing for the outside audience.

page 9, Table 4: lambda values - where do they come from? I am not sure I caught it in the text. Are they from [19] or [20]? If yes, please, cite them in the table caption.
The lambda values were not obtained from an outside study. These values were obtained using the THERMINATOR 2 and HIJING simulations. I will rearrange the order of things so that the table is presented after the description of the calculation, instead of before.

l.219 Maybe here give a reference to paper [p–p, p–Λ and Λ–Λ correlations studied via femtoscopy in pp reactions at √s = 7 TeV], where the same sources of residual correlations for Λ were taken into account. And also to the BBar paper where the 'fixed' lambda parameter method from different residual contributions is applied for the first time
Citations added

L.237. Please, specify here values of scattering parameters. Does any theoretical prediction for scattering parameters for such a pair exist?
A couple of lines below it is written that for Ξ− K± strong interaction
assumed to be negligible. It seems that it is necessary to write everything more carefully here.
The scattering parameters used for Coulomb-neutral pairs are equal to those used for the daughter LamK system (be it LamK+, LamK-, or LamK0). These scattering parameters are left free during the fit process, and their extraction is the main point of this analysis. Therefore, in the end, the scattering parameters used for the Coulomb-neutral parent pairs are equal to the final LamK results, and it seems a bit premature to quote the final results here.

I am not aware of any reliable theoretical predictions for any of the parent systems.

Yes, consistent results are obtained when using the experimental Ξ-K± data or when modeling the system with a Coulomb-only scenario. Therefore, when the Coulomb interaction is present, it is fine to ignore the strong interaction's contribution to the parent correlation function. For the Coulomb-neutral pairs, of course the strong interaction is always considered.

I have tried to reword things to avoid any confusion.

line 240: N_Total - I have not found any formula with this.
Removed

line 260: the effect is included the estimation -> the effect is included in the estimation. ?

line 292: k*, The -> k*. The

l.306 and Fig.2 : dashed line is almost invisible
I changed the binning of the histograms, and changed a bit the line attributes. Hopefully the fit lines are more visible now. If the line is still too difficult to see, I welcome any suggestions to fix this.

l.307 LK0s skipped or other procedure is used to LK0s?
The same procedure is now used for LamK0s as is used for LamKch, i.e. the THERMINATOR 2 simulation is used for all systems. I have updated the text.

l.307-308. It is correct to write: the description is remarkable? THERMINATOR corresponds to the form of non-femtoscopic correlations, but not the absolute value.
OK. Changed wording to “good” instead of “remarkable”

l.307-312
It seems the non-femtoscopic correlation formula(polynomial) should be added here, since the liner term is not used. And maybe reasonable to add more details which parameters of polynomial scaled.
Two new formulas have been added.

line 355: delete one "with a"

page 15, fig 3: data is shown -> data are shown (same for fig 4 and 5)

l.316-322.
It is seen that authors insist on a discussion of the method. OK.
It is not clear what the conclusion of this paragraph. Why nothing is said about LK-, LK0s? If this method is so good, then why is THERMINAROR used instead?
No conclusions in the paper regarding the description of correlations (extracted radii and scattering parameters) with this method are given.
I think it will be a question in future why method is shown, but not used e.g. systematics.
The results for LamK- look just as those for LamK+. For the case of LamK0s, the method flattens the background, but not as efficiently as for the LamKch systems; I am currently looking further into this effect.
This method is not currently being employed as it was discovered at the end of the current analysis. The effect of this method on the non-femtoscopic background is not mentioned in any publications that I have been able to find; it is only mentioned in short in a couple of papers. Furthermore, those in the ALICE femtoscopy group were unfamiliar with this method; therefore it seems important to include these results so others working to improve their non-femtoscopic background treatment may consider it in the future.

l.340 It should be mentioned here which scattering parameters are used with Eq.5.
Again, it seems a bit premature to quote the final results here. The scattering parameters are free parameters of the fit, in many respects their extraction is the entire purpose of this study.

l.375 Could you add some word about primary (LK) contribution? It is seen that this contribution(dashed curve) for 0-10% is close to the final fit (solid curve). And primary contribution in 30-50% is different from the final fit. What is the reason?
The primary contribution in all cases is different from the final fit, the difference is just most pronounced for the 30-50% centrality bin. As described in the first round of comments, the effect is most pronounced for the 30-50% centrality bin because the non-femtoscopic background contribution is largest here. The residuals contribute only slightly to the final fit, so the difference in the primary contribution and final fit is due mostly to the non-femtoscopic background.
I have added a sentence explaining this effect.
I can add words describing the difference in shape of the correlation functions. I do not think this is

what you are asking for, so I have left this out for now.
I can remove the primary component if you think this would be better?

l.395 Please, say something about lambda parameters. Should lambda be equal unit?
The lambda values should be close to one, but do not need to to be exactly equal to one.
Sentence added stating lambda parameters expected to be close to unity.

395: PRF is already defined in line 162.

page 18, fig. 7: data is shown -> data are shown.
ALICE data is shown with transparent, open symbols - 0-10% are not open, 10-30% are open, does is mean 10-30% are published and 0-10% are not? :-)

l.399-401. It is not clear here. Do you mean radii (they also) for pipi, KK, pp , not LK?
Please, reformulate.

l. 538 It should be noted that the method gives for LK-, LK0s.
Need the reference to ALICE paper on pion correlations (https://arxiv.org/pdf/1012.4035.pdf https://journals.aps.org/prd/pdf/10.1103/PhysRevD.82.052001 ) where this method was also used.
Reference added.

B Relative Emission Shifts with THERMINATOR 2.

It would be reasonable to add C11 functions for different source shifts in the outward direction and compare these functions with the results shown in Fig.6.
I have tweaked Figure C.1 (previously Fig. B.1) in the current version, and in the top right I have included the experimental ReC11 correlation function together with that from the standard THERMINATOR 2 simulation. I have also included a new plot, Figure C.3 which shows both ReC00 and ReC11 for the ALICE data together with the THERMINATOR 2 simulation using Gaussian sources with various offsets in the outward direction.