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HIN-16-013 CWR Comments

[link](#)

Type A Comments

Comment NO.1 (Nikolay Tyurin, IHEP-Protvino)

C1:Structure of paper is standard, no remarks and comments on it.

LE	
Response	Thanks

Comment NO.2 (Albert De Roeck, CERN)

C1:line 151: Geant4 is written in the wrong format for what we usually do in CMS papers. (HI papers do seem to ignore this 😊) Please check a recent pp paper. ps: we use: `\newcommand{\GEANTfour}{\textsc{Geant4}}\xspace`

LE	
Response	done

C2:line 260/252 "accessed" -> probed?

LE	
Response	done

Comment NO.3 (Marc Besancon, Scalay)

C1:L.93 "furture" -> do you mean "further"

LE	
Response	done

C2:ref [43] perhaps, if possible, add a trema on the "o" of Sjostrand

LE	
Response	done

Comment NO.4 (Yasar Onel, University of Iowa)

C1:Abstract:the CMS experiment-> the CMS detector.

LE	I would defer to Greg on this title. He suggests rewriting and removing CMS altogether.
Response	Changed according to Greg's comments.

C2:Line 90: transverse direction-> I think you were intended to write transverse momentum direction ?

LE	I think you mean transverse to the beam axis. If so, you might want to say this more clearly.
Response	Changed to "transverse to the beam axis direction"

C3:Line 93: the HF with more than 3 GeV of total energy is required for pPb collisions to furture remove-> I do not understand what do you mean by furture . I think you do not need to use this word here. I think there is a typo here, if not, please clarify.

LE	
Response	it is a typo. done

C4:Line 142: Please also write the reason why the primary vertex cannot exceed 3.

LE	
Response	The authors do not quite understand this comment. Please clarify.

C5:Line 147: for pPb events are shown in Fig. 1. Please use for pPb events before the verb are.

LE	Both seem fine to me. I like it a little better as originally written.
Response	keep it as it is.

C6:Line 160: is calculated using Eq.3. Instead of "from" please please write "using Eq.3".

LE	No, you shouldn't refer to eq.3 explicitly if it is next in line. I would, however, replace "is calculated from" with "is given by"
Response	changed to "is given by"

C7:Line 187: This sentence is not a good sentence for the beginning of a paragraph. Could you please write a few sentences for the beginning before explaining the Tables. Or, you may move the paragraph (Lines 187-190) to below line 213.

LE	change it to "The dominant sources of ...determination. Tables 1 and 2 summarize..."
Response	done

C8:L17 "particle production" --> "particle productions"

LE	It is definitely "particle production"
Response	leave it as it is

C9:L24 "superpositions" --> "superposition"

LE	Since you are talking about multiple collisions, "superpositions" is correct.
Response	leave it as it is

C10:L29 "parametrized" --> "parameterized"

LE	
Response	done

C11:L93 "furture remove" --> "remove"??

LE	
Response	"furture" is a typo. it has been changed to "further".

C12:L94 "backgroud" --> "background"

LE	
Response	done

C13:L233 "Figure 3" --> "Fig. 3" to be consistent with earlier usages.

LE	
Response	done

C14:L270 "Figure 6" --> "Fig. 6" to be consistent with earlier usages.

LE	
Response	done

Comment NO.5 (Vassili Kachanov, IHEP)

C1:It make sense to add "in pPb collisions" in one phrase in the Abstract: "... In addition, the asymmetries in the K0S and Lambda+Lambda_bar yields between equivalent positive and negative ...

==>

"... In addition, in pPb collisions the asymmetries in the K0S and Lambda+Lambda_bar yields between equivalent positive and negative ...

LE	
Response	done

C2:It make sense to add a short description (an explanation) of the radial flow effect because there are several references to this effect. This description could be very short (in the same fashion as the description of the Cronin effect (see the paragraph started at line 34, page 1)).

LE	I think it is a good idea to define radial flow briefly, as you did with the other effects.
Response	done

C3:The page 9 (line 269) and the page 16 (The caption to Figure 5): The first symbol "<" in the text: "...with < -0.8 < y_CM < -0.3 ..."

should be removed. I.e. "...with < -0.8 < y_CM < -0.3 ..." ==> "...with -0.8 < y_CM < -0.3 ..."

LE	
Response	done

C4:Page 9, the line 294 ... the values of y_CM are larger ... y_CM should be replaced by Y_asym

LE	
Response	done

C5:There are different spelling of "radial flow": "radial flow" and "radial-flow"

LE	
Response	done. "radial-flow effect" or "radial flow"

Comment NO.6 (Olga Evdokimov, University of Illinois at Chicago)

C1:1.2: "considered as a" -> "considered a"

LE	Both are OK, but I like Olga's version better.
Response	done

C2:1.13: Remove comma after ALICE [7]

LE	Yes, remove the comma after ALICE
Response	done

C3:1.15: 'recombination models for pT > 2 GeV, similar to those found in AA collisions -> recombination models similar to those found in AA collisions for pT > 2 GeV

LE	I believe you mean for "similar to those found in AA collisions" to apply both to radial flow and recombination. If so, the sentence needs to stay as it is.
Response	leave it as it is

C4:1.17 "dA as compared to pp collisions" -> "dA, as compared to pp collisions,"

LE	How about rewriting the sentence:
----	-----------------------------------

	Particle production in pA and dA has been extensively studied both at RHIC[] and the LHC[] using the nuclear modification factor to compare to pp collisions.
Response	done

C5:1.20 "collisions scaled -> collisions, scaled". Also particle yield in AB collisions to those in pp collisions -> particle yield in AB collisions to that in pp collisions or particle yields in AB collisions to those in pp collisions

LE	Take both of Olga's suggestions
Response	done

C6:1.28: results in -> results of'

LE	either is fine
Response	leave it as it is

C7:1.29: parametrized -> a parametrized'

LE	Either is fine but spelling is "parameterized"
Response	corrected the typo.

C8:1.36 "spectra at intermediate pT in" -> "spectra, at intermediate pT, in"

LE	You don't need the first comma but the second one is fine
Response	done

C9:1.42: "phenomenon that" -> "phenomenon where"

LE	accept the change
Response	done

C10:1.46: "All three effects, radial flow, Cronin enhancement, and nuclear shadowing are expected" -> "The radial flow, Cronin enhancement, and nuclear shadowing effects are all expected"

LE	accept the change
Response	done

C11:1.47 to have different characteristic particle production -> does not read right, may be to have different effects on particle or to have different characteristic in terms of particle production

LE	I prefer "to have different effects on particle production"
Response	done

C12:1.48 For better readability, please rephrase to The radial flow is expected to be greater in the Pb-going than the p-going direction, and therefore to produce a stronger mass ordering on Pb-going side

LE	accept the change
Response	done, mass ordering->mass dependence(type B c10).

C13:1.55 "and of the" -> "and in the" or "as well as the"

LE	keep as is or accept the second suggestion.
Response	keep it as it is

C14:1.58-61: The length of the particle list makes the transition between L59 and L60 awkward. Maybe rework sentence, e.g. This analysis presents pt spectra of strange and multi-strange particles at $-1.8 < y_{CM} < 1.8$, ... TeV. These measurements are shown for the K^0_S , ... particles.

LE	accept the change
Response	done

C15:Section 2: Consider using the recommended verbiage from <https://twiki.cern.ch/twiki/bin/viewauth/CMS/Internal/PubDetector> for the general CMS and HF descriptions, in addition to the tracker description.

LE	
Response	done

C16:l.72 There are around 1800 modules in the silicon pixel detector, not 1440 (I think that's from phase 0. What year was their data collected?)

LE	
Response	Date were collected in 2013 and 2015. Phase 1 upgrade happened in the winter shutdown of 2016/2017. We should still use 1440.

C17:l.93: furture -> further

LE	
Response	done

C18:l.94: backgroud -> background

LE	
Response	done

C19:l.102-114: Parts of this paragraph are awkward and could be rewritten; see below for suggestions:

LE	
Response	see below

C20:l.102: 'From the PYTHIA8 Tune 4C [43] generator, the efficiency with respect to the inelastic events for the selections described in the paragraph above in pp collisions is 95%.' -> 'The PYTHIA8 generator with Tune 4C [43] is used to simulate the selection efficiency in pp collisions. The efficiency to identify inelastic events is 95%.'

LE	accept the change
Response	done

C21:l.104: fraction of selected events -> selection efficiency

LE	accept the change
Response	done

C22:l.108: "About 99% of pPb DS events are selected from simulations using the HIJING MC generator [44]." -> "In a simulated sample of pPb DS events produced using the HIJING MC generator [44], the above selection has a 99% selection efficiency."

LE	accept the change
Response	done

C23:l.109: "Based on the estimate using EPOS LHC [30] and HIJING [44] event generators, the double-sided events" -> "The EPOS LHC [30] and HIJING MC generators estimate that DS events"

LE	accept the change
Response	done

C24:l.111: "Similar" -> "Similarly"

LE	Try: "A procedure similar to that in [] is used to correct the strange-particle spectra in pp and pPb collisions to spectra for inelastic collisions and DS events, respectively, with multiplicity-dependent correction factors"
Response	done

C25:l.112: "corrected to inelastic" -> "corrected to spectra for inelastic". Also, as functions of the event multiplicity. -> with multiplicity-dependent correction factors or with correction factors determined as functions of the event multiplicity.

LE	check C24
----	-----------

Response	done
----------	------

C26:l.114: "inelastic collisions" -> "inelastic collisions spectra"

LE	accept the change
----	-------------------

Response	done
----------	------

C27:l.118 "topology by combining" -> "topology, which combines"

LE	leave as is
----	-------------

Response	leave it as it is
----------	-------------------

C28:l.119 Please define what is " good secondary vertex"

LE	
----	--

Response	"good" is an ambiguous word. The authors have changed this sentence to "to define a secondary vertex", as what is written in HIN-15-006.
----------	--

C29:l.120 Please specify what range you call an " appropriate invariant mass"l.125 "with respect to the primary vertex" -> ", with respect to the primary vertex,"

LE	accept the change and define it in the text, or refer to the figure here.
----	---

Response	done, referred to the figure.
----------	-------------------------------

C30:l.119: detached -> displaced

LE	
----	--

Response	done
----------	------

C31:l.123: requirements -> requirements are applied

LE	accept the change
----	-------------------

Response	done
----------	------

C32:l.124: its decay products -> the V0 decay products'

LE	accept the change
----	-------------------

Response	done
----------	------

C33:l.125: vertex are applied -> vertex

LE	accept the change
----	-------------------

Response	done
----------	------

C34:l.125: This significance, the -> This significance, defined as the

LE	accept the change
----	-------------------

Response	done
----------	------

C35:l.128: Because of -> Due to

LE	keep as is. you cannot substitute "Due to" for "Because of"
----	---

Response	keep it as it is
----------	------------------

C36:l.132: avoid -> remove

LE	accept the change
----	-------------------

Response	done
----------	------

C37:l.133: 'the mass of a K^0_S or candidate, assuming both tracks to have the electron mass, must exceed 15 MeV. -> the V0 candidate mass must exceed 15 MeV if the tracks are both assumed to have the electron mass

LE	accept the change
----	-------------------

Response	done
----------	------

C38:l.137: pion and kaon -> pion (kaon) . Use same syntax with particle symbols. Remove respectively from end of sentence.

LE	accept the change
----	-------------------

Response	done
----------	------

C39:l.139: a proton (pion) track -> the proton (pion) track

LE	keep as is
----	------------

Response	keep it as it is
----------	------------------

C40:l.143: Add space before vertices and remove comma after

LE	
----	--

Response	done
----------	------

C41:l.164: Remove parentheses, replace because with as

LE	remove parentheses and replace "because" with "since"
----	---

Response	done
----------	------

C42:l.166: "3D distance of closest approach" -> "3D DCA"; also, " with respect to the primary vertex" -> ", with respect to the primary vertex,"

LE	use 3D DCA but don't add the comma
----	------------------------------------

Response	done
----------	------

C43:l.167: Move while to beginning of sentence (While stringent...candidates, up to...)

LE	accept the change
----	-------------------

Response	done
----------	------

C44:Table 1 caption: uncertainties of -> uncertainties in ;

LE	accept the change
----	-------------------

Response	done
----------	------

C45:Table 1: Add spaces after pileup effect , beam direction

LE	
----	--

Response	done
----------	------

C46:l.173 Remove coma after as,

LE	
----	--

Response	done
----------	------

C47:l.183 "second iteration of correction" -> "second correction iteration"

LE	Use: "A second iteration of the correction procedure"
----	---

Response	done
----------	------

C48:l.205 " for spectra" -> " for the spectra". Also, "through propagation" -> "through the propagation"

LE	either is OK
----	--------------

Response	leave it as it is
----------	-------------------

C49:l.214: 'for the value of the R_pPb and the Yasym -> for the R_pPb and Yasym measurements

LE	accept the change
----	-------------------

Response	done
----------	------

C50:l.223 The pp spectrum, for the purposes of measuring the RpPb, is measured as -> For R_pPb

calculations, the pp spectrum is measured as

LE	accept the change
Response	done

C51:l.230 For purpose of better visibility, spectra -> For better visibility spectra or " To improve visibility"

LE	To improve visibility
Response	done

C52:l.241 -" RpPb in this pT range," -> "RpPb, in this pT range,"

LE	leave as is
Response	leave it as it is

C53:l.238 greater mass showing larger RpPb -> greater mass corresponding to larger RpPb

LE	accept
Response	done

C54:l.241: They indeed show -> The calculations indeed predict'

LE	accept
Response	done

C55:l.242: "with even stronger mass ordering in the calculations" -> "to a greater degree of mass-dependence than observed in data" (unless suggestion from Type B part is adopted)

LE	accept, but do not hyphenate mass dependence
Response	done

C56:l.244 which -> , which

LE	accept
Response	done

C57:l.256-257 "The Cronin effect with the parton multiple scattering interpretation predicts" -> "The Cronin effect, with the parton multiple scattering interpretation, predicts"

LE	accept
Response	done

C58:l.260 "fraction x" -> "fraction, x,"

LE	
Response	done

C59:l.262 effect and -> effect, and

LE	
Response	done

C60:l.263 [22, 49], a -> [22, 49]. A

LE	Leave as it, but delete "a picture"
Response	done

C61:l.270: 'the Yasym as functions of pT for K⁰_S and Lambda for different rapidity ranges -> Yasym as a function of pT for different rapidity ranges of K⁰_S and Lambda

LE	leave as is
Response	leave it as it is

C62:l.274 to Yasym -> to the Yasym

LE	
Response	done

C63:l.278: "models such as hydrodynamic and recombination, which also have mass ordering effect and number of constituent quark differences, respectively." -> "hydrodynamic and recombination models which include mass ordering effects and differences in the number of constituent quarks, respectively."

LE	accept
Response	done

C64:l.281 - increase -> increases

LE	
Response	done

C65:l.282 - fail -> fails

LE	
Response	done

C66:l.286: factor -> factors

LE	
Response	done

C67:l.285-287 "With the efficiency corrected spectra, the nuclear modification factor of K0S, ϕ , and Λ - in $-1.8 < y_{CM} < 1.8$, $-1.8 < y_{CM} < 0$, and $0 < y_{CM} < 1.8$ are measured. "-> "The nuclear modification factors of K0S, ϕ , and Λ - in $-1.8 < y_{CM} < 1.8$, $-1.8 < y_{CM} < 0$, and $0 < y_{CM} < 1.8$ are measured using the efficiency corrected spectra."

LE	accept
Response	done

C68:l.289 being -> which is

LE	accept
Response	done

C69:l.291: that of -> in

LE	accept
Response	done

C70:l.294: First y_{CM} should be Yasym

LE	
Response	done

C71:l.296 "model including collective flow" ->" model, including collective flow,"

LE	leave as is
Response	leave it as it is

C72:l.297: y_{CM} -> Yasym

LE	
Response	done

Comment NO.7 (Nicholas Wardle, Imperial College)**Comment NO.8 (Greg Landsberg, Brown University)**

C1:Title: "multi-strange" is jargon, and it's not needed in the title at all; neither is the mention of CMS. Please, modify along the following lines: "Measurement of the nuclear modification factor of identified strange hadrons in pPb collisions a5.02 TeV ". In principle, "identified" could be dropped as well from the title - if you know they are strange hadrons, you have identified them.

LE	I think something along these lines Greg suggests would be a stronger title.
Response	done

C2:L1: similar to the title, please change to: "The abundance of hadrons containing strange quark(s) has long been ..."

LE	Agree
Response	done

C3:L1: strange-hadron;

LE	
Response	done

C4:L2: in proton-proton (pp) and proton-lead (pPb) collisions;

LE	
Response	done

C5:L4: for pp and pPb collisions, respectively;

LE	
Response	done

C6:L8: add a comma after "baryons";

LE	
Response	done

C7:L3-4: heavy ion collisions at the CERN SPS and LHC, and the BNL AGS and RHIC, show an enhancement;

LE	
Response	done

C8:L7: strange-particle production in pPb collisions by the ALICE Collaboration [7] indicate;

LE	
Response	done

C9:L8-9: of two-particle and multiparticle azimuthal correlations in high-multiplicity proton-proton (pp), pPb, and;

LE	it is fine either way
Response	leave it as it is

C10:L12-13: The measurements of strange-particle production in small systems by the CMS [14] and ALICE [15] Collaborations suggests that;

LE	
Response	done

C11:L14: for the low-pT region;

LE	
Response	done

C12:L15: similar to the case of the AA collisions.

LE	
Response	done

C13:L16: whether the collectivity can;

LE	
Response	done

C14:L17: add a comma before "as";

LE	
Response	done

C15:L18; and LHC [20-22] [or "the RHIC ... and the LHC];

LE	
Response	done

C16:L20: to those in pp;

LE	leave as is
Response	leave it as it is

C17:L26-27: final-state effects;

LE	
Response	done

C18:L29: add a comma after "flow";

LE	
Response	done

C19:L31: larger RpPb values for;

LE	
Response	done

C20:L32: especially for baryons with multiple strangeness (– and –). Thus, strange-particle RpPb measurement can;

LE	
Response	done

C21:L36: add a comma before "relative";

LE	
Response	done

C22:L39: at the LHC energies;

LE	
Response	done

C23:L41-42: from the RHIC to LHC energies [35].

LE	
Response	done

C24:L54: in larger RpPb values in the;

LE	
Response	done

C25:L56: particle yield rapidity asymmetry;

LE	
Response	done

C26:L58: of strange hadrons: KS0;

LE	accept
Response	done

C27:L62: The RpPb of the baryon is studied;

LE	
Response	done

C28:L67: The CMS detector;

LE	
Response	done

C29:L69: brass and scintillator;

LE	
Response	done

C30:L72: 15 148 silicon strip modules [separate thousands];

LE	Looks odd to me; I'd leave it as is
Response	leave it as it is

C31:L80: Data samples and event selection;

LE	
Response	done

C32:L81: Minimum bias (MB) pp and pPb;

LE	
Response	done

C33:L82: 5.02 TeV, corresponding to integrated;

LE	
Response	done

C34:L83: The MB pp collisions [can't start a sentence with an acronym];

LE	
Response	done

C35:L84: a calorimeter tower energy above a predefined threshold.

LE	
Response	This sentence has been modified.

C36:L94: background [spelling];

LE	
Response	done

C37:L100: in Ref. [41];

LE	
Response	done

C38:L110: the DS events correspond to 94--97% [en-dash, not a hyphen];

LE	
Response	done

C39:L111: in Refs. [22,41];

LE	
Response	done

C40:L113: by 3--6% [en-dash];

LE	
Response	done

C41:L119: are displaced from the primary;

LE	
Response	done

C42:L121: pion mass is assigned;

LE	
Response	done

C43:

L135: For the Λ and Σ -baryon reconstruction;

LE	
Response	done

C44:

L137: pion or kaon track in Λ or Σ -reconstruction, respectively.

LE	
Response	done

C45:L139: from the Λ candidate decay;

LE	
Response	done

C46:L140: (Λ) baryon decay;

LE	
Response	done

C47:L144: between the Λ candidate vertex;

LE	
Response	done

C48:L152:KS0 mesons, and;

LE	
Response	done

C49:L158-159: and reconstruction efficiency (ϵ), using simulation based on the `{\sc epos lhc}` event generator and;

LE	
Response	done

C50:Eq. (3): use B(Greek Letter) in the denominator;

LE	
Response	done

C51:L161: use B(Greek Letter);

LE	
Response	done

C52:L166: for the candidates;

LE	
Response	done

C53:Fig. 1 caption, LL1-2: of KS0(upper left), (upper right), – (lower left), and –(lower right) candidates within $ly_{CM} < 1.8$ in pPb collisions.

LE	
Response	done

C54:L173: derived from data as;

LE	
Response	done

C55:Eq. (4) and L175: subscript "np" in Roman;

LE	
Response	done

C56:L176: The N –corr... [can't start a sentence with a math symbol];

LE	
Response	done

C57:L183-184: of the baryon yield;

LE	
Response	done

C58:L184: to –and –baryon yields are;

LE	
Response	done

C59:L187: in the KS0;

LE	
Response	done

C60:L188: asym for different y_{CM} ranges;

LE	
Response	done

C61:Table 1 caption, L2:RpPb measurements for different;

LE	
Response	done

C62:Table 1 body, first column: Pileup effect (pp only); Beam direction (pPb only); Integrated lum. (pp only); Yield in pp coll.; Yield in pPb coll.; columns 2-5: typeset all the ranges with an en-dash, not a hyphen, e.g. 0--4.0;

LE	
Response	done

C63:Table 2 caption, L1: uncertainties in the asym measurement in pPb collisions.

LE	
Response	done

C64:L191: from the yield;

LE	
Response	done

C65:L195: 0--4.0\%;

LE	
Response	done

C66:L197: 1.0--6.0\%;

LE	
Response	done

C67:L205: for the candidate spectra;

LE	
Response	done

C68:

L206: subscript "np" in Roman;

LE	
Response	done

C69:

L207: 2.0--3.0\%;

LE	
Response	done

C70:

L208: 1.0--3.0\%.

LE	
Response	done

C71:

L212: 1.0--5.0\%.

LE	
Response	done

C72:

L213: As in Ref. [22], the uncertainty in T_{pPb} is 4.8\%.

LE	
Response	done

C73:

L219: and Λ -production;

LE	
Response	done

C74:

L232: the RpPb values of ... and Λ - particles are;

LE	
Response	done

C75:

Fig. 2 caption, LL1-2:KS0(upper left), Λ (upper right), Λ -(lower left), and Λ -(lower right) particles for $-1.8 < y_{CM} < 1.8$;

LE	
Response	done

C76:

L247-248: predicted RpPb values from \sqrt{s} epos lhc agree with data;

LE	
Response	done

C77:

L250: radial-flow and nuclear shadowing effects [30,36].

LE	
Response	done

C78:

L251: The RpPb values of ... and Ξ - particles for $-1.8 < y_{CM} < 1.8$;

LE	
Response	done

C79:

L252: of Λ - baryon is not;

LE	
Response	done

C80:L259-260: at the LHC energies.

LE	
Response	done

C81:

L265: and Λ particles;

LE	
Response	done

C82:

L282: the particle species dependence at forward rapidities.

LE	
Response	done

C83:

L284: and $\bar{\nu}$ -particles in proton-proton and proton-lead collisions;

LE	
Response	done

C84:

L285: efficiency-corrected spectra;

LE	
Response	done

C85:

L286-287: and $0 < y_{CM} < 1.8$ ranges are measured.

LE	
Response	done

C86:

L287: RpPb of $\bar{\nu}$ -baryon is only;

LE	
Response	done

C87:

Fig. 3 caption, L1: (Upper) Nuclear; LL2-3: (purple open squares) particles for $-1.8 < y_{CM} < 1.8$ in pPb collisions. The error bars; L6: and pPb collisions. The data; L7: (Lower) The ratios; L8: for KS0, ... and $\bar{\nu}$ -particles of the $\{\sqrt{s}$ epos lhc $\}$ predictions to the measurements are shown.

LE	
Response	done

C88: Fig. 4 caption, LL2-3: (blue open circles) particles for $-1.8 < y_{CM} < 0...$ in pPb collisions. LL5-6: to the $\{\sqrt{s}$ epos lhc $\}$ predictions, including;

LE	
Response	done

C89:

Fig. 5 caption, LL1-2: particles for $-1.8 < y_{CM} < -1.3$;

LE	
Response	done

C90: Fig. 6 caption, L1: The asym of; L5: to the $\{\sqrt{s}$ epos lhc $\}$ predictions, including;

LE	
Response	done

C91:Ref. [6]: typeset the erratum as: [Erratum: {\it Phys. Lett. B} {\bf 734} (2014) 409].

LE	
Response	done

C92:Ref. [12]: remove ", no. 7,".

LE	
Response	done

C93:

Refs. [13,49]: give just the first page, not a range.

LE	
Response	done

C94:

Ref. [25]: remove the http link - it's not an arXiv reference.

LE	
Response	done

C95:

Ref. [46]: switch to the most recent 2016 edition.

LE	
Response	done

C96:

Ref. [47]: Collaboration is spelled twice; suggest replacing with a published tracking paper.

LE	
Response	fixed

Comment NO.9 (Tatjana Susa, Rudjer Boskovic Institute)

Comment NO.10 (Sijin Qian, Peking University)

C1:Throughout the paper (including in Figure captions, legends and plotlabels, etc.), to be consistent with some good examples in this paper (e.g.Fig.1's caption and plot labels at the upper-left corner of each plot, etc.), an inequality can be shortened from " $-1.8 < y_{CM} < 1.8$ " -->" $|y_{CM}| < 1.8$ " The places where the shortenings can be made are L60, L62,L147,L220,L231,L233-234,Fig.2 (two legends (the 2nd lines), and in the caption (2nd and 4th lines)),L286,L288, and Fig.3 (the plot label at the upper-right corner and in the caption (the 2nd line)), etc.

LE	
Response	The authors prefer to leave $-1.8 < y_{cm} < 1.8$ as it is, because with this format, people can compare the range with $-1.8 < y_{cm} < 0$ and $0 < y_{cm} < 1.8$ more directly.

C2:The first two lines, as the "pT" is used a few times in the Abstract, it should be explained at its 1st appearance in the Abstract on the 2nd line, i.e.

"transverse momentum spectra in pp and pPb collisions are ..." -->

"transverse momentum (p_T) spectra in pp and pPb collisions are ..."

LE	
Response	done

C3: The 8-9th lines, to be consistent in this Section (e.g. the 1st line and last three lines, etc.) and this paper, the spaces before and after three symbols of "+" should be removed, i.e.

"RpPb($\Omega^- + \Omega^+$) > RpPb ($X^- + X^+$) > RpPb ($\Lambda + \Lambda_{\bar{b}}$)."

"RpPb($\Omega^-+\Omega^+$) > RpPb (X^-+X^+) > RpPb ($\Lambda+\Lambda_{\bar{b}}$)."

LE	
Response	done

C4:

The 3rd line above the bottom, it may be slightly clearer if a comma is added, i.e.

"For $p_T > 2.0$ GeV the asymmetries are greater"

"For $p_T > 2.0$ GeV, the asymmetries are greater"

LE	
Response	done

C5:

L14 and L51, the " p_T " should be explained at its appearance in text on L14, i.e.

"effect [15] for the low p_T region and" --> "effect [15] for the low transverse momentum (p_T) region and"

Afterward, L51 can be shortened from

"because of the transverse momentum broadening of the initial partons" -->

"because of the p_T broadening of the initial partons"

LE	accept
Response	done

C6:

L18, L54, L76 and L110. These lines may be shortened from

(a) L18: (to be consistent with RHIC)

"both RHIC [16 19] and the LHC [20 22] using ..." -->

"both RHIC [16 19] and LHC [20 22] using ..."

(b) L54:

"in a larger RpPb in the Pb-going direction than the p-going direction." -->

"in a larger RpPb in the Pb-going than p-going directions."

or

"in a larger RpPb in the Pb- than p-going directions."

(c) L76: (as the "eta" has been just explained on L73)

"cover a pseudorapidity range of $2.9 < \dots$ " -->

"cover a range of $2.9 < \dots$ "

(d) L110: (as the "DS" has been just explained on L105)

"the double-sided events correspond to 94-97% of inelastic pPb" -->

"the DS events correspond to 94-97% of inelastic pPb"

LE	L18, keep as is. L54, "in a larger RpPb in the Pb-going than the p-going direction". L76, either is fine. L110 accept
Response	done

C7:

L67, to be consistent with all other Section titles, the last word should

be in the lower case, i.e.

"2 The CMS Detector" -->"2 The CMS detector"

LE	
Response	done

C8:

L137, a word of "and" and a comma may should be replaced by two words

of "or", i.e.

"is assumed to be a pion and kaon track in X-, Omega- reconstruction," -->

"is assumed to be a pion or kaon track in X- or Omega- reconstruction,"

LE	
Response	done

C9:

L223, a pair of brackets should be added to dissolve the ambiguities among

the following options, i.e.

$1/2\text{pipT}$ may mean $(1/2)*\text{pipT}$ or $1/(2\pi)*\text{pT}$ or $1/(2\text{pipT})$ or others.

LE	
Response	done

C10:

L266-269 and Fig.5's caption (the first 4 lines),

(a) four lines are almost identical in text and in the caption, I'm not sure whether the duplication should be avoided;

(b) on L268-269 and/or the 4th line of Fig.5's caption, I'm not sure whether the index "n" should be explained,
e.g. (also an extra symbol "<" before the inequality should be removed)

"scaled by factors of 10n,

with $-0.8 < y_{CM} < -0.3$ not scaled." -->

"scaled by factors of 10n, where the n runs from -2 to 3,

with $-0.8 < y_{CM} < -0.3$ not scaled, corresponding to $n = 0$.

LE	fine as is
Response	leave it as it is

C11:

L280-281, three places may be shortened by using " y_{CM} ", i.e.

"in the three rapidity ranges. The calculated Y_{asym} increase from mid-rapidity to forward rapidity," -->

"in the three y_{CM} ranges. The calculated Y_{asym} increase from mid- to forward- y_{CM} ,"

LE	
Response	extra "<" has been removed

C12:

L286, L288 and L290. Per the guidelines of CMS PubComm, some acronyms

should be explained at their 1st appearances in the Summary Section, i.e.

(a) L286 and L288: (together with the item (1) above for " $|y_{CM}|$ ")

"in $-1.8 < y_{CM} < 1.8$, $-1.8 < y_{CM} < 0$, ... $-1.8 < y_{CM} < 1.8$. In the intermediate p_T range from 3 to 6 GeV,"-->

"in the center-of-mass rapidity intervals $|y_{CM}| < 1.8$, $-1.8 < y_{CM} < 0$, ... $|y_{CM}| < 1.8$. In the intermediate transverse momentum p_T range from 3 to 6 GeV,"

(b) L290:

"RpPb in the Pb-going" -->"the nuclear modification factor R_{pPb} in the Pb-going"

LE	
Response	done

C13:

Between L298 and L299, the Acknowledgment Section is missing yet, a short

version should be added without needing the Section index number.

LE	
Response	done

C1:Fig.3, in the caption, the 1st and 7th lines, to avoid any possible confusions with the "top" and "bottom" quarks, the position indicators may be better to be changed from "Figure 3: (Top) Nuclear modification factors of K0S (black filled circles), ...share the same color for each particle species. (Bottom) The ratios of ..."

-->

"Figure 3: (Upper) Nuclear modification factors of K0S (black filled circles), ... share the same color for each particle species. (Lower) The ratios of ..."

LE	
Response	done

C14:

L302, in [1], the word of "Review" in the article title may should be in

the lower case, i.e.

"Strangeness in dense nuclear matter: A Review of AGS results" -->

"Strangeness in dense nuclear matter: A review of AGS results"

Another one which also needs to be changed by the similar way is [40] for the word of "Simulation".

LE	
Response	done

C15:

L304, in [3], to be consistent in this Section, two spaces before and

after the hyphen in the article title can be removed, i.e.

"in Pb - Pb collisions at 158" -->

"in Pb-Pb collisions at 158"

Other ones which also need to be changed by the similar way are

[4] (before and after two symbols of "+" on L306 and L307),

[16]-[18], [21] and [36] (before and after the "+" in each Ref.), and

[29] (before and after the "/").

LE	
Response	done

C16:

L307, in [4], to be consistent in this Section and this paper, the subscript "NN" of "sNN" in the article title should be changed

from (together with the item (16) above for the spacing

"compared to $p + p$ at \sqrt{sNN} (italic) = 200 GeV " -->

"compared to $p+p$ at \sqrt{sNN} (non-italic) = 200 GeV "

Other ones which also need to be changed by the similar way are

[5]-[7], [13], [15]-[17], [19], [21] and [49] (for the font);

[20], [41] and [48] (for changing to the smaller letter size and lower subscript position); in addition,[41] (to remove an extra space between two "N"s)

LE	
Response	done

C17:

L331, in [12], to be consistent in this Section, an extra index after the year number should be removed, i.e.

"Eur. Phys. J. C 76 (2016), no. 7, 372," -->"Eur. Phys. J. C 76 (2016) 372,"

LE	
Response	done

C18:

L334-335, in [13], to be consistent in this Section, all references should have only one page index instead of zero or two,

i.e. (together with the item (17) above for the font of "NN")

"at \sqrt{sNN} (italic) = 5.02 TeV , Phys. Lett. B 749 (2015) 68 81," -->

"at \sqrt{sNN} (non-italic) = 5.02 TeV , Phys. Lett. B 749 (2015) 68,"

Other ones which also need to be changed by the similar way are [21], [34] and

[49].

LE	
Response	done

C19:

The "year" number should be given for Ref.[24]. If there would be problems to display the year number with the default bib file, it may be fixed by changing from "article" to "unpublished" in the bib file.

LE	
Response	done. Ref.[24] is deleted since it not published and we already have a published ref. for Glauber model.

C20:

L390, in [32], to be consistent in this Section, the 1st name in the author part should be completed, a word of "and" may should be added before the 3rd author, or the 2nd-3rd authors may be removed, i.e.

"[32] H. J. F. D. Antreasyan, J. W. Cronin et al.," -->

"[32] H. J. Frisch, D. Antreasyan, and J. W. Cronin et al.,"

or"[32] H. J. Frisch et al.,

Another one which also needs to be changed by the similar way is [31].

LE	
Response	done

C21:

L417-418, in [42], to be consistent with the PAS Refs. in all other CMS papers,

(a) the author part should be shortened obviously,

(b) the document name should be changed, and the names of institute and city

should be removed, i.e.

"[42] CMS Collaboration Collaboration, ... , Technical Report CMS-PAS-LUM-16-001, CERN, Geneva, 2016." -->

"[42] CMS Collaboration, ... , CMS Physics Analysis Summary CMS-PAS-LUM-16-001, 2016."

Another one which also needs to be changed by the similar way for both (a) and (b) is [47].

LE	
Response	done

C22:L419, in [43], "[43] T. Sjostrand, ..." -->"[43] T. Sjo(with two dots on the top of "o")strand, ..."

LE	
Response	done

C23:L426, in [45], to be consistent in this Section and this paper, the font of "pp" in the article title should be changed from

"Strange Particle Production in pp(*italic*) Collisions at ..." -->"Strange Particle Production in pp(non-*italic*) Collisions at ..."

Another one which also needs to be changed by the similar way is [49] for the "J" in the "J/psi".

LE	
Response	done

Comment NO.11 (Raphael Granier De Cassagnac, Centre National de la Recherche Scientifique)

C1:

At line 77, you should use the sentence "A more detailed description of the CMS detector, together with a definition of the coordinate system used and the relevant kinematic variables, can be found in Ref.~\cite{Chatrchyan:2008zzk}.". according to our guidelines.

LE	
Response	done

C2:

Line 83, avoid starting a sentence with a symbol or acronym -> The MB (as you do in the following line)

LE	
Response	done

C3:

Line 99, the average pileup is approximately 0.9 is unclear and should be very precisely defined (as you do for pPb at line 94). If 3% and 0.9 have the very same definition, then use 90% or 0.03.

LE	
Response	0.9 and 3% have different definition. pileup should be number.

C4:

Line 145, should we define what this 10 are to avoid a possible confusion between 10% or 10 sigmas?

LE	
Response	the use of "significance" should be self-explaining.

C5:

Tables 1 and 2, lines 195 and 197, you use the double dash --for ranges, as mentioned in our guidelines. Also at line 207, 208, 212, please search for all occurrence.

LE	
Response	done

C6:

Unify your titles 6.1 and 6.2, either use words or symbols. We'd have a preference for backward/forward asymmetry at line 265.

LE	
Response	done

Type B Comments

Comment NO.1 (Nikolay Tyurin, IHEP-Protvino)

C1:**The Introduction** is clear and comprehensive. As a comment:it would be useful to add discussion on the qualitative dependence on centrality of the three mentioned effects, namely, radial flow, Cronin enhancement and nuclear shadowing.

Response The authors think adding centrality dependence discussions will distract the readers of the paper, since the paper only focuses on the minimum-bias analysis. We agree that centrality dependence studies of these effects are very interesting and could be done in another paper. Thus, we prefer not to add the discussions here.

C2:Section devoted to **the event selection** also would become better with inclusion of the events classification according to the centrality values in small colliding systems.

Response For the same reasons as the previous comment, we will not add centrality related discussions.

C3:**Summary** could also be extended and include discussion of the results' dependence on centrality and discussion of the physical implications of the results. Discussion of the new constraints on theoretical models should be made more detailed and informative with listing the particular theoretical models and mentioning how the new l results are constraining them. It is known that the collective effects are observed in small systems too (e.g. the ridge). How this fact is consistent with the remark on the referent role of small systems for the discussions of the collective effects in large systems? Should this remark be changed or remain as it is in view of these observations?

Response Detailed discussions are in each subsection of the Result section. In the Summary section, we already have these sentences: "Cronin-like enhancements are visible and clear mass ordering is observed, being consistent with expectations from a radial-flow effect in hydrodynamic models." and "The calculated trend of R_{pPb} for different particle species in the $\sqrt{s_{NN}}=2.76$ TeV EPOS LHC model including collective flow is consistent with the data, but the model fails to describe the particle-species dependence of $\langle \mathcal{M} \rangle$ in the forward rapidity." The collective effects are observed before in small systems, but only in the high-multiplicity region. This paper presents both low- and high-multiplicity regions, and study the R_{pPb} of the strange particles.

Comment NO.2 (Albert De Roeck, CERN)

C1:We have published a paper on strange hadron production last year, including pPb data. We should somehow say what is new here for this study (eg the pT spectra, the asymmetry study...?)

Response Done. Both R_{pPb} and asymmetry studies are new for strange hadrons. We added "for the first time" in one sentence of the last paragraph in the Introduction section.

C2:On the points that were brought up in the introduction on the different effects that can be at work in the data, and the predictions we have from EPOS and other models, it would be useful that we come back at the end on that, in a some systematic way: what is confirmed and what not (like the final state parton explanation of the Cronin effect?)

Response There are no other predictions/calculations available for the variables presented in the paper. In the Summary section, we already mentioned "Cronin-like enhancements are visible and clear mass ordering is observed, being consistent with expectations from a radial-flow effect in hydrodynamic models". We still can not conclude strongly about what is confirmed and what is excluded. This could be done by theoretical calculations that include all different effects.

C3:Does EPOS include a Cronin effect according to one of the possible schemes? That should be interesting to point out.

Response Done. We added that EPOS includes "multiple scattering between partons" in the Introduction section. It is not clear to us if the multiple scatterings in EPOS are the same as these explaining the

Cronin effect. The parton recombinations that explain the Cronin effect are definitely not included in EPOS.

C4:line 84: no easy to understand for the non-CMS reader. We did not say in the detector section what HF towers are, and here we do not say what a "signal" is. (> 3 GeV)? Please add more information

Response Done. The sentence is modified to "MB \pp\ collisions are selected using an HF hardware-based level-1 trigger requiring signals above threshold in either one side of HF calorimeters.", very similar to our CMS paper: JHEP04(2017)039

C5:line 95: how much pile-up do we have in this data sample? By how much do we reduce the luminosity killing the pile-up? While certainly explained in ref 39, how do we actually determine the purity of the single event sample top be 99.9%? There is a fraction of the secondary pp interactions that leaves no tracks no primary vertex tracks in the tracker. Do you mean that for the events selected for reconstruction of particles with strangeness you asses that the contribution of it that comes from a pile-up events is less than 1%?

Response Done. The pileup is about 0.06 in pPb. The killing luminosity is about 3%. From simulation and data driven studies (details see AN-12-377 and AN-13-060), the efficiency of the pileup rejection is more than 92+/- 2%. This reduces the fraction of events with pileup from 3% to less than 0.3%. The filter was found to remove as few as 0.01% of events which contained only a single collision. The sentence with 99.9% was not accurate and is replaced with "The pileup-rejection efficiency is found to be $92 \pm 2\%$, which is confirmed using a low pileup data sample.", similar to the CMS paper "Eur. Phys. J. C 75 (2015) 237". We indeed mean that the fraction of pileup events in the selected data is less much than 1%.

C6:line 113: That correction must be based on a model. Is it PYTHIA? I recommend to mention that here.

Response The correction is based on models. The models are mentioned in line 109.

C7:line: 128: It took me a while to understand this sentence: do you mean here that the DCA significance of the line of flight of the V0, extrapolated backwards to the primary vertex, has to be less than 2.5? Then please write something like that. Same for line 142.

Response Yes. We will add "with respect to the primary vertex", which is similar as what is written in QCD-10-007.

C8:line 209: how did we make these low and high pile up samples samples? There is not much pile-up in the data to start with (average is 0.9 only). what was done?

Response high pile up sample is achieved by using the Golden Json file. for low pile up we used the json file saying low-pileup. The pileup of high pileup sample is around 0.9, which is indeed a high number for heavy ion.

C9:line 212: is this reporting on a systematic check by comparing the positive p direction sample with the negative p direction sample? Then 5% is large is a large number, if this is statistically significant. How come we we have such a difference?

Response In principle, this difference should be small. The 5% we have is for the most forward rapidity bin. For the mid-rapidity the difference is around 1% for Ks and Lambda. These numbers are consistent with previous publication, HIN-15-006.

C10:line 223: the weight factor is the proper thing to add for presenting such data, as I did myself in a previous life (> 20 years ago 😊) but I forgot what was the origin of it?

Anyway if you can, just say why we add that factor. Invariance of the cross section? phase space factor?

Response The 2pipt factor comes from the calculation of lorentz invariant difference crosssection section:

$$E d^3\sigma/dp^3 = 1/(2\pi p_t) d^2N/(d\eta dy)$$

C11:check line 226/ref [41]: does that refer to where the 70 mb is coming from? Did we (or somebody else like TOTEM) measure that or do we assume that (I forgot). I guess there is an uncertainty on that number...

(we do use it here only as a scale factor of course).

Response ref[41] has the following sentence: "The pp inel utilized in the Glauber calculation is 70 ± 5 mb"
 C12:line 239: you mean consistent in a qualitative way? do we have any quantitative expectations from this models for our energy/particle species to compare with? (even if we do not reproduced these putative results on Fig3.)?

Response Yes, we mean data and epos lhc calculation are consistent in a qualitative way. As far as the authors know, there is no quantitative expectations from this model. Besides, epos lhc only has parameterized flow, which is not a real hydro flow.
 C13:line 242: For me this says that, except for low pT, EPOS clearly does not describe the data, even when you look at it in the ratio plot with the systematic error bands. That looks to me independent of whether there are such possible recombination effects.

Response Yes, epos lhc clearly does not describe the data. EPOS LHC only has parametrized flow, and for the high pt part as mentioned in the paper, RpA of epos lhc is around 0.5, which is due to the strong screening in nuclear collisions in EPOS which reduces the number of binary collision in the initial state. Here, we want to see whether the parameterized flow in EPOS LHC shows mass effect or not.
 C14:line 258: This is an important information which we should stress in the conclusions, even with the caveat in the next sentence.

Response We have added the following sentence to the summary part:
 This trend is consistent with expectations from the radial-flow effect in hydrodynamic models, while contradicts the expectations of the multiple scattering interpretation of the Cronin effect, which, however, could be explained by the prediction that this effect is small compared to the nuclear shadowing effect at LHC energies.
 C15:line 263 not sure I understood why this "the probed x-value of the nucleon is expected to be smaller in the nucleus than in a free proton". The parton density should be higher than in the free proton, but why $\langle x \rangle$ lower? Probably I miss something.

Response The sentence was confusing. We changed it to "should be smaller in the p-going direction because the accessed x fractions in the nucleus are smaller.". This is similar to what we said on line 53 in the introduction.
 C16:line 282: this observation is fine but can we think or speculate on where that comes from?

Response To be honest, we don't have a better explanation for this.
 C17:line 296: EPOS: well, this works only for $pT < a \text{ few GeV}$. Then the model clearly does not seem to describe the data.

Response Here we only talk about the overall trend in a qualitative way.

Comment NO.3 (Marc Besancon, Scalay)

C1:We like the introduction. Useful informations are given there for non cognoscenti and those not too familiar with the subject !

Response Thanks!

C2:L.223 not clear what you mean by this weighting $1/2 \pi pT$? And its motivation is not clear either (it might be a current practice in the HIN community for which several of us are not too familiar with)

Response The $2\pi pT$ factor comes from the calculation of lorentz invariant difference crosssection section:

Response $E d^3 \sigma / dp^3 = 1 / (2 p_{T^2} d^2 N / (d p_{T^2} d y))$

C3:L.229 are there uncertainties attached to this number $\langle N_{coll} \rangle = 6.9$ from the Glauber simulation ?

Response Yes, there are uncertainties attached to this number. $\langle T_{AB} \rangle = \langle N_{coll} \rangle / \sigma^{inel}_{nn}$. The uncertainty of $\langle T_{AB} \rangle$ is mentioned in line 213.

C4:L.243 ".. is clearly smaller ..." : for the high p_T range this seems to be an understatement. We find it "significantly" smaller. In view of figure 3 one would tend to conclude that EPOS does not describe the data especially not at all above ~ 5 GeV (or ~ 7 GeV for one of the hadron category).

Response yes, epos lhc doesn't describe data at high pt due to the strong screening in nuclear collisions in EPOS, which reduces the number of binary collision in the initial state, which is explained in the paper. The authors will leave the use of "clearly" or significantly to be decided by the LE.

C5:Same for Figure 4. EPOS does not seem to describe the data at all.

Response In the paper, we mentioned the agreement is in a qualitative way. We know epos lhc will not describe our data, since it only has parameterized flow and it also has strong suppression at high pt. We only want to check whether mass ordering can be observed in epos lhc, which has parameterized flow.

C6:L.258 It is said that the Cronin effect with parton multiple scattering interpretation is inconsistent with data is it possible to be a bit more quantitative ?

Response No, we don't have a model to compare with to be more quantitative.

C7:In the top plot of figure 6 it is difficult to distinguish between the different hadron category.

Response That is because they don't show much difference among different hadron category.

C8:We agree with the corresponding statement in L.282 i.e. "...but fail to describe .."

Response Thanks!

C9:We would tend to also apply this "failure in the description" statement to the nuclear modification factor in figures 3 and 4.

Response Right, as we mentioned in C4, epos lhc is only compared to data in a qualitative way. We don't expect it to describe data quantitatively.

C10:We wonder if there are other models than EPOS to compare with as EPOS does not seem to describe the data very well ?

Response Unfortunately, we don't have other models to compare to.

C11:L.295-L.296 "... consistent with the data ..." not too much convinced by this in view of figures 3 and 4.

Response We are saying the "calculated trend" not the exact data points.

Comment NO.4 (Yasar Onel, University of Iowa)

C1:The texts above Figure 2 and 3 are out of shape. Please move the texts (TLatex) 1 or 2 cm to the left. Figure 2 must be located below Line 250. You can use [H] command in latex to locate the figure where you want. Figure 3 and 4 must be located above Section 6.2. Move the Figures 5 and 6 above the Section 7 (Summary)

Response The position of figures has been fixed.

C2:Figures: Fig. 1 bottom left x axis title: the location of minus sign on top of the pion seems higher than normal usage.need to be fixed.

Response Latex did the trick to match the size of Lambda.

C3:In the summary section, the physical implications of the results could be mentioned.

Response more physical implications have been added.

Comment NO.5 (Vassili Kachanov, IHEP)

C1: There is a question concerning the presentation of p_T dependence (see Figure 2). In the page 7, line 230-231, there is a phrase: "... For purpose of better visibility, spectra for different y_{CM} ranges are scaled by factors of 10^n , with $-1.8 < y_{CM} < 1.8$ not scaled."

One should expect that the sum of the physical spectra for negative y_{CM} and for positive y_{CM} should be equal to spectra with $-1.8 < y_{CM} < 1.8$.

The points in these plots are presented the spectra for negative y_{CM} ($-1.8 < y_{CM} < 0$, blue points), multiplied by factor of 10, and for the positive y_{CM} ("red"), divided by 10.

Therefore, one should expect that the sum of the "blue" spectra times by 10 and the red ones times by 1/10 should be equal to "black" ones. However, it is seen from these figures that the "blue" spectra times by 10 and the "red" ones times by 1/10 are approximately equal to "black" points. Therefore, the sum of these spectra would be two times larger than "black" ones !

Response You may need to note that the spectra have been normalized by bin width of y_{CM} .

Comment NO.6 (Olga Evdokimov, University of Illinois at Chicago)

C1: There is very little description of the physics results and/or conclusions in the abstracts at the moment (other than that the data is compared to EPOS). Please synchronize the statements with those in the summary, where description of the results is much more explicit.

Response Done

C2: 1.27 indicate that final state effects, such as those from the recombination models [27-29], the references 27-29 are misleading here. None of these cited works talk about a importance of the recombination in the d+Au (or p+Pb for that matter) collisions, which the text, as worded, may seem to imply. These have to be moved to l. 15, where recombination is first mentioned, and not be attached to this statement.

Response Done

C3: General comment, somewhat related to above: the introduction makes a rather strong emphasis on recombination, making a reader to expect that some new findings presented later will shed a light on wherever it is important for particle production in pPb. The results presented, and, more important, their discussion makes no strong conclusions (if at all) in that regard (however, discussions on other mechanisms are quite detailed and interesting). This smears a bit the impression from the paper, and would be best if it could be de-emphasized.

Response The word "important" is removed on line 27 in the introduction. Meanwhile, one sentence is added in the result section, "In order to fully understand the particle production in this p_T range, more theoretical calculations including the recombination models would be helpful.", to balance the appearance of recombination in the introduction and discussion part.

C4: 1.59 hereafter referred to as Ξ^- it is common to use just Ξ and Ω (with no) for both combined-charge measurement; it is confusing to re-designate Ξ^- for $(\Xi^- + \Xi^+)$

Response We used the same convention as previous CMS publication: QCD-10-007 and HIN-15-016.

C5: 1.102 the efficiency with respect to the inelastic events -> please specify efficiency of what (presumably, vertex reconstruction + event selection cuts; it is not clear if vertex finding efficiency is included in or not)

Response Changed to "the event selection efficiency with respect to the inelastic processes in \sqrt{s} collisions is 95%". The event selection cuts include the vertex reconstruction (finding).

C6:1.114 The values of RpPb will decrease by 3-6% if pPb spectra are corrected to inelastic collisions. the previous sentence states that the corrections ARE applied; while will decrease .. if seem to state that they are not. Which is it?? If the corrections are in, please change to The values of RpPb *decrease* by 3-6% when pPb spectra are corrected to inelastic collisions or clarify the sentence before this one.

Response pPb spectra are corrected to DS. The sentences are consistent with each other.

C7:1.128: When you refer to the 3D DCA significance of the V0 candidate, is this the 3D DCA significance of both daughter tracks? Or the 3D DCA of the reconstructed V0 trajectory? Same for L142.

Response It is the 3D DCA of the reconstructed V0 trajectory.

C8:1.139: Is this selection in addition to the Lambda selection described earlier? If so, isn't the proton track already required to have 3D DCA significance larger than 2?

Response Yes, here we are just trying complete the picture of Xi and Omega reconstruction.

C9:1.235: R_pPb for Lambda does not actually seem consistent with 1 at 7 TeV by eye. How significant is the difference?

Response From the plot, one can see the lower bound of that point is around 1.07. Considering the systematic of TAA and Lumi, we think there is no issue to say it is consistent with 1.

C10:1.242 even stronger mass ordering -> even stronger mass dependence (ordering is binary (either there or not), it cannot be stronger)

Response done

C11:1.242-244: R_pPb is only shown to be smaller in simulation compared to data at high pt for mesons, since the baryon data does not extend to high pt -- please clarify this in the text

Response Done

C12:1.247-248: Does simulated K⁰_S R_pPb really agree with data for pT < 3 GeV? The disagreement at pT~0.5 GeV seems significant

Response We would not say the disagreement is significant. Even for the point pt around 0.5, the difference is within 20%.

C13:1.250 and expected from both the radial flow and nuclear shadowing effects -> and could be attributed to both, the radial flow and nuclear shadowing, effects (since you can't tell which one, rather than have a precise calculation that it has to be some combination of the two)

Response done

C14:1.258 with a larger RpPb -> with a larger RpPb on the p-going side

Response done

C15:1.295: Should this be R_pPb or Yasym? In either case, saying that the calculated trend is consistent with data is too generic -- say specifically what aspect of the distribution is correctly modeled, as there are significant differences overall

Response Done.

C16:Figure 2, y-axis caption: is very hard to read and the multiple numerators/denominators are merged together (also, upper/lower panels labels are merged); please update using fraction style. Same for Figure 5.

Response The authors prefer the current style, and are open to make changes if others have strong preference.

C17:Figure 2 caption: "at -1.8 < y_{CM}" -> "for -1.8 < y_{CM}"

Response done

C18:Figure 2, 5: Are the statistical error bars missing, or just too small to be seen (covered by the markers)? Please mention in the caption if smaller than symbols.

Response Yes, they are covered by markers. In the caption, we have one sentence saying "The errors bars correspond to statistical uncertainty".

C19:Figure 2/3/4: Why are the baryon spectra only shown up to $p_T \sim 6$ GeV? Is this due to lack of statistics? The p_T spectra in Figure 2 do not seem to be statistics limited, assuming the statistical uncertainty error bars are too small to be seen.

Response For $p_T > 6$ GeV, we are running out of statistics. We need invariant mass peaks to extract the yield counts.

C20:Captions for figures 3, 4, and 6: " predictions including" -> "predictions that include"

Response done

C21:Figures 3-6: these figures would be much better placed around the text describing it, at the very least before the bibliography

Response done

C22:Figure 3 caption: factors of -> factors for

Response done

C23:Figure 3 caption: 'The ratios of nuclear modification factors of ... of EPOS LHC to measurements -> The ratios between measured nuclear modification factors for ... and EPOS LHC predictions

Response done

Comment NO.7 (Nicholas Wardle, Imperial College)

C1:L150: When you say weighted average, how is this weighted? Is it by the normalisations of the Gaussian components?

Response average $\sigma = \sqrt{(y_1/(y_1+y_2)) \cdot \sigma_1^2 + (y_2/(y_1+y_2)) \cdot \sigma_2^2}$, where y_1 and y_2 are the yields from the first and second Gaussian respectively.

C2:L154-155 : Can you quantify this? I would appreciate some Goodness of fit numbers here, even if its just mentioned in the plot/figure caption.

Response We have tried the goodness of fit, however, the number doesn't seem good, although we have done our best on tuning the fitting functions. That is why we didn't show the numbers of goodness of fit. All the other CMS strangeness papers didn't show the goodness of fit either. Besides, we have an systematic error which studies how much our results will change if we use a different background fitting function.

C3:L193-195 : I'm rather confused as to what this systematic is meant to represent. When you say in the signal region, do you mean just counting events in a window (of what size?) around the peak and subtracting background? If this number is similar enough, then what is the need of the fit?. How do the uncertainties on those two approaches compare?

Response There are two ways to get the signal counts. One is to rely on the fit (CMS usually uses this approach). The other is to count on the histograms, by assuming your background is linear around your peak region (3 sigma window), (ALICE usually uses this approach). We are just trying to see how different these two methods are. The difference is shown as the systematic source of "Yield Extraction".

C4:Fig 2 caption: Please refer to the PubComm guidelines for describing horizontal and vertical error bars on points : <https://twiki.cern.ch/twiki/bin/view/CMS/Internal/PubGuidelines#Commas> (look in the Uncertainty

vs. error paragraph) - same goes for Figs 3 - 6

Response Done

Comment NO.8 (Greg Landsberg, Brown University)

C1:L10-11: move Refs. [12,13] to the end - those are not about jet quenching, but about non observation of this effect in pPb collisions!

Response Done

C2:Eq. (1): defineNPP, PP which should be typeset with "pp" in small letters as superscripts.

Response Done

C3:L28: give `{\sc epos lhc}` generator version here.

Response add v3400

C4:L75: Steel hadron forward (HF) calorimeters ...

Response Done

C5:L92: the phrasing is ambiguous; remove the ambiguity by saying: "... at least one HF calorimeter tower on each of the negative and positive sides ..."

Response Done

C6:L102-103: give full `{\sc pythia}` version here, 8.2xy; change [or add] the reference to Pythia 8.2, not 8.1; also reference tune 4C: "Using `{\sc pythia}` 8.2xy generator [43] with the underlying event tune 4C [xx], the efficiency ... above in pp collisions was estimated to be 95\%."

Response done

C7:L109: give `{\sc hijing}` version here; remove Ref. [30] - already referenced on L28.

Response done

C8:L110: remove Ref. [44] - already references on the previous line.

Response Done

C9:L119: give a reference to our tracking and vertexing paper on "good secondary vertex".

Response "good" is an ambiguous word. The authors have changed this sentence to "to define a secondary vertex", as what is written in HIN-15-006.

C10:L148-149: In this fit, each strange-particle mass peak is modeled with a sum of two ...

Response Done

C11:L153-154: what do you mean by "the sum of two daughter tracks"? Did you mean "sum of the assumed two daughter track masses"? Please, rephrase properly.

Response changed to "where q is the difference between the mass of mother candidate and sum of the assumed two daughter track masses".

C12:

L158: please use standard notation for branching fraction [not ratio!] in CMS: B: ... for branching fraction (B), ...

Response done

C13:Figure 1: the KS0 label is much bigger [and in bold] compared to the other three labels; make them all of the same size and style. The sentence in the caption is incorrect: charge conjugation is implied for all four

species, as K^*S0 , which you certainly include in the analysis is the charge-conjugate of the K_s . In fact the fact that you imply charge-conjugate states should be explicitly mentioned earlier, on LL116-117.

Response done. The "charge conjugation" sentence has been deleted. The authors have indicated the charge conjugation at the end of the introduction part L58.

C14:L175-176: ... fraction of nonprompt candidates in the reconstructed sample, and is obtained from MC simulation.

Response Done

C15:L298-299: Acknowledgements are completely missing - please add the standard medium-length version.

Response Done

Comment NO.9 (Tatjana Susa, Rudjer Boskovic Institue)

C1:From the comparison of the EPOS LHC model (with collective flow in pp and pPb collisions) to the data in Figs. 3 and 4, it is clear that model does not describe the data (except at low pt).

Response here we are just doing a qualitative comparison.

C2:It is pointed out that the Croning effect with the parton multiple scattering is inconsistent with the data. As a possible, qualitative, explanation it is mentioned that this effect is small compared to the nuclear shadowing effect.

Response We mentioned this possible qualitative explanation in Line 258.

C3:In my opinion all this effects should be discussed in a more quantitative way. One possibility is to compare data with the predictions of other models (if they exist).

Response The authors agree with this comment. However, for now EPOS LHC is the only model we can compare to.

Comment NO.10 (Sijin Qian, Peking University)

Comment NO.11 (Raphael Granier De Cassagnac, Centre National de la Recherche Scientifique)

C1:

We find the notation of particle+antiparticle rather heavy in the abstract, and would prefer using the condensed notation that is used in the figures and everywhere in the text. This being said, we notice that both conventions were unfortunately used in HIN abstracts in the past (<https://arxiv.org/abs/1605.06699> and <https://arxiv.org/abs/1508.06678>)

Response In the abstract, we used particle+antiparticle. However, in the introduction part, line 59, we simplified the notation.

C2:

Can we really avoid citing Alice's paper in Nature ?

<https://www.nature.com/nphys/journal/v13/n6/full/nphys4111.html>. Around line 7, we should probably add that strangeness enhancement is also seen in high-multiplicity pp collisions.

Response done

C3:

Line 215, is it only a matter of reconstruction? Isn't there a contribution from the detectors actually not being the same?

Response It is only a matter of reconstruction algorithm.

C4:

Would be nice if you could sneak in more figures in the text pages, rather than after the references.

Response Done

-- HongNi - 2018-04-02

This topic: Main > HIN16013CWRCComments

Topic revision: r27 - 2018-07-17 - HongNi



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