Comments from Bill Zajc

6: “gained substantial” seems a little awkward, suggest instead “attracted increasing”
Done

17: “mass of the quark” Is this the current mass (consistent with perturbative calculation)? Would help to clarify this.
Changed to:
“the bare quark mass”

45: suggest “interference arises …, which leads to …”
Done

50: “Here the process dependence…”
I am having a hard time understanding this sentence. It seems like process dependence is being put in somewhere to keep something else process independent? Perhaps this is clear to experts, but not to me.
Changed from:
“Here the process dependence of some nonperturbative functions due to initial- and final-state interactions with remnants is included in a perturbative functions in order to keep the parton correlation functions process independent [11]”
To:
“In order to keep the multiparton correlation functions process-independent, the initial- and final-state interactions between the struck parton and the proton remnants are included in the hard perturbative part of the twist-3 collinear factorization. [11]”

98: “disfavored fragmentation” is jargon, what does it mean?
Changed to:
“Nonzero kaon and antiproton asymmetries observed at forward rapidities show that the measured asymmetries cannot be due only to proton valence quark contributions as naively predicted in a valence-like model, where Sivers effect from sea-quarks and/or gluons is ignored, and that the fragmentation of quarks into hadrons in which they are not valence quarks could play a role in the observed nonzero asymmetries [4, 26].”

107: Perhaps “making” —> “extending” ?
After all, making the same measurement repeatedly will not produce much progress.
Done

151: “and used” —> “and is used”
Done

171: “The contribution of detector noise…"

It’s not quite clear that the “detector” is the EmCal; would be good to clarify this, and to note that time-of-flight is as measured in the EmCal. Since it’s Phys. Rev. D you have space to include information on the time resolutions and the actual value of the cut.

Changed from:

“The contribution of detector noise is reduced by a minimum energy cut of 0.5 GeV and a time-of-flight cut. The time zero reference of the event is provided by the BBC. “

To:

“The contribution of EMCal detector noise is reduced by a minimum energy cut of 0.5 GeV and a time-of-flight cut of \(|TOF| < 5 \rm ns \). The timing of the cluster is measured by the EMCal and the time zero reference of the event is provided by the BBC.”

213: “The background fraction…”

I had a hard time parsing this sentence. One way to improve it would be to change the second part to

“and is determined to vary in the region under the π^0 peak from 10% …”

Changed to:

“Using this method, the contribution of combinatorial background under the pi0 peak is determined to vary from 10% in the lowest p_T bin to 6% in the highest.”

228: “in Tables I and II”. The reader who looks at Tables I and II will be very puzzled (at least I was), by the bunch shuffling systematic values (mostly zero).

I suggest adding to both tables captions something like “See text for discussion of the bunch shuffling systematic error.”

Got rid of the bunch shuffling column in Tables I and II and added the following sentence to the tables’ captions:

“The total \sigma_syst in the lowest pT bin includes an additional systematic uncertainty of <value> from bunch shuffling.”

272: “consistent with zero…”

Thank you, I was afraid you would not mention this ;-)

For both this and the eta you might wish to include results of a fit to

A_N(p_T) = a + b p_T.

Both asymmetry results are consistent with zero and there is no physical motivation for them to depend linearly on p_T.

But fitting the pi0 asymmetry with a linear function yields a slope of 0.00019 +/- 0.00020 with a chi2/dof = 0.984 and fitting the eta asymmetry to a linear function yields a slope of -0.00038 +/- 0.00089 with a chi2/dof = 1.106

278: “and zero” —> “and with zero”

Done

302: remove “shown”

Done

307: “use the generalized parton model (GPM) which takes the kT moment of the Sivers function”

perhaps this means something to the expert reader, but not to this one.

Changed to:

“which takes the first k_T moment of the Sivers function (e.g. $\int{k_T\cdot q(k_T)}$) “

333: First sentence in this paragraph is a little ambiguous and uses “generate” in some form twice. The ambiguity is that (I think) “them” refers to TSSA’s and “they” (maybe) refers to the underlying physical processes. Here is a suggestion, of course further clarifications would be useful:
“Measurements of TSSAs in p+p collisions are essential to understanding the underlying non-perturbative processes that generate these asymmetries.”
Changed from:
“Measurements of TSSAs in \pp collisions are essential to understanding the underlying physical processes which generate them since they must be nonperturbatively generated.”
To:
“Measurements of TSSAs in \pp collisions are essential to understanding the underlying nonperturbative processes which generate them.”

343: “the measurements” is ambiguous, I think it is referring the data of Reg. 22(?)
Changed to:
“these forward rapidity measurements”

349: “This provides…” —> “These data provide…"
Done

358: “up to very high precision” should be replaced with a quantitative statement.
Changed from:
“The measured asymmetries are consistent with zero up to very high precision and have a significant reduction in statistical uncertainty from previous measurements at midrapidity at RHIC.”
To:
“The measured pi0 (eta meson) asymmetry is consistent with zero in the presented pT range, up to precision of 3x10^{-4} (2x10^{-3}) in the lowest pT bins. Both measurements have a significant reduction in uncertainty from previous measurements at midrapidity at RHIC. “

361: “This” —> “These"
Done

Comments from Ralf Seidl

Line 27: [I would remove the word "transverse" as that is not correct in general. In SIDIS (where this formalism is really very applicable) the large scale is not a transverse momentum but the momentum transfer.]
Done

40: fragmented --> fragmenting [also I would remove "within a jet" as a reconstructed jet is not required for the Collins FF]
Done

49: only one
Done

88ff: [I am not sure I agree with this discussion. Yuji Koike has shown in a few papers, that you get a 1/Pt^2 dependence at very large transverse momenta while your overall dependence is of the form M^2/M^2+P^2 where M would be some kind of (unknown) mass scale. If that scale is on the order of a GeV or larger you would initially get a rising Asymmetry, then a flattening and only eventually a fall-off.]
Adjusted the language and added Ref. [23] -> PRD 89, 111501 (2014):
“It is interesting to note that inclusive hadron TSSA measurements in hadronic collisions appear to plateau at p_T up to 5 GeV/c [3,5] and have been measured to be nonzero at moderate x_F up to p_T ~ 7 GeV/c [6,22]. Recent studies in the twist-3 framework have successfully described the p_T dependence of these forward asymmetries by including twist-3 effects in hadronization [23]. The twist-3 perturbative prediction is that the asymmetry should eventually decrease as the hard scale p_T continues increasing [21].”

282: [I think at forward rapidity the asymmetries are now also consistent with each other - most of the pion eta differences came from the apparently incorrect preliminary result from STAR...]
Changed to:
“At forward rapidity, existing measurements [26, 30] do not yet clearly resolve whether the η meson asymmetry is larger than the π0 asymmetry as predicted in some models.[31]"

342: [There is an easy explanation for this: jets do not have any final state azimuthal modulations related to Collins-like correlations - Daniel Pitonyak et al are quite convinced that the large asymmetries at forward rapidities are originating from the final state effects. For jets you would then just have the cancellation of the smaller, initial state, Sivers-like effects from up and down quarks. You should either acknowledge these difference or remove these statements]
Whole paragraph before the Summary changed to:
“Measurements of TSSAs in p+p collisions are essential to understanding the underlying nonperturbative processes which generate them. In particular, further measurements are necessary to clarify certain questions in the interpretations of the TSSAs. For example, the small forward jet asymmetries measured in Ref.[24] have been interpreted as a cancellation of up and down quark asymmetries, implying that the comparatively large forward neutral pion asymmetries include significant contributions from spin-momentum correlations in hadronization. [23]”

343ff [see comment above]
See adjusted language above

Comments from Susumu SATO

(0) All figures.
  (0-i) In order to describe about "factor 3 better error bar" (you said e.g. in L271),
or
  (0-ii) in order to describe about significance of comparison with model
  (you said e.g. in L330 to L331 "HAS the statistical precision at low pT"),
all the figures (especially low pT, namely e.g. pT < 5GeV/c) MUST be zoomed up !
To be more explicit the following comments from #(1) to #(7).
Figures have been zoomed in and increased size slightly

(1) fig1
The y-axis is for too large area, namely there is no information for y-axis value is over some 0.035 nor below some -0.015, (although your y-axis is from 0.1 to -0.07.) Almost factor 4, useless empty area is allocated in the figure.
The y-axis has been zoomed in

(2) fig2
ditto, namely there is no information for y-axis value is over some 0.08 nor below some -0.5, (although your y-axis is from 0.2 to -0.15.) Almost factor 3, useless empty area is allocated in the figure.
This y-axis has also been zoomed in

(3) fig 3
ditto, namely there is no information for y-axis value is over some 0.02 nor below some -0.01. (although your y-axis is from 0.05 to -0.03.) Almost factor 3, useless empty area is allocated in the figure.
This y-axis has also been zoomed in

(4) fig 4
ditto, namely there is no information for y-axis value is over some 0.01 nor below some -0.01. (although your y-axis is from 0.02 to -0.015.) Almost factor 2, useless empty area is allocated in the figure.
This y-axis has also been zoomed in

(5) fig 1's inserted figure
ditto TOO SMALL
The insert’s size has been increased slightly

(6) fig 2's inserted figure
ditto TOO SMALL
This insert’s size has also been increased slightly

(7) fig 4's inserted figure
ditto TOO SMALL
This insert's size has also been increased slightly

(8) abstract (and other places) [minor comment]
"eta" for eta-meson
"eta" for pseudo-rapidity
are better to be in different font.
E.g. eta(-meson) is as it is, and eta(pseudo-rapidity) in non-italic face.
Using "eta" for both the eta-meson and pseudorapidity has been done in previous PHENIX publications, including PPG107 and PPG135

(9) L392
"e+ e-"
==> should be well formatted.
Done

(10) Table I
"numbers e- numbers"
==> should be properly expressed.
Done

(11) Table II
ditto. "numbers e- numbers"
==> should be properly expressed.
Done

(12) Table I, sigma_syst(bunch shuffling) column
What are 0's (zeros) ?? (other than the first 1.06 x 10^-4)
If it shows very small numbers, a description something like "< 1.0 x 10^-8" (1-^-8 is an example) should be suitable.
Removed column and added text to the table caption:
"The total \sigma_syst in the lowest pT bin includes an additional systematic uncertainty of 1.06 x 10^-4 from bunch shuffling."

(13) Table 2, sigma_syst(bunch shuffling) column
What are 0's (zeros) ?? (other than the first 6.02 x 10^-4)
Removed column and added text to the table caption:
"The total \sigma_syst in the lowest pT bin includes an additional systematic uncertainty of 6.20 x 10^-4 from bunch shuffling."

Comments from Yuji Goto

L27: It would be more clear if you could show what corresponds to kT and Q in the measurement, e.g. parton transverse momentum in L30-31 for kT, and nonperturbative transverse momentum in L48-49.
Done

L85: hadron -> forward hadron
Done

L89-91: The plateau at high pT has been explained by the twist-3 FF as shown in Kanazawa et al. PRD 91 (2015) 014013.
Added the sentence:
“Recent studies in the twist-3 framework have successfully described the \pt dependence of these forward asymmetries by including twist-3 effects in hadronization (cite Kanazawa et al. PRD 89 (2014) 111501)”

L121-122: Refs. should be given for the beam polarization measurement in this run.
Added citation of https://technotes.bnl.gov/Home/ViewTechNote/209057

L142: 2 sectors -> two sectors
Done

L144: \Delta -> \delta, because \Delta was used in L139.
Done

L147-151: It would be better to divide it into two sentences; A tracking system consists of a drift chamber and pad chamber stations. The drift chamber measures track momentum and the pad chamber stations measure charged particle position in front of the calorimeter and are used to veto charged particles.
Changed from:
“A tracking system consisting of a drift chamber to measure track momentum and pad chamber stations to measure charged particle position [29] in front of the calorimeter and used to veto charged particles.”
To:
“A tracking system includes a drift chamber to measure track momentum and pad chamber stations to measure the charged particle hit position [29]. The measurement of the track positions in front of the calorimeter is used to veto charged particles from the photon sample. ”

L161-163: It would be better to describe the photon trigger is made with EMCal (and taken in coincidence with the MB trigger).
Photon trigger sentence moved to the previous paragraph that included the MB trigger and the wording has been modified slightly:
“This analysis is based on the data sample selected with the EMCal-based high-energy-photon trigger with energy threshold of 1.5 GeV, which is taken in coincidence with the minimum bias trigger.”

L183-184: Was the beam polarization direction evaluated in this analysis, how far off the true vertical?
The Run-15 beam polarization direction was studied by Minjung and found to be zero within statistical uncertainties. You can find a description of this study in this Spin PWG meeting presentation:
https://phenix-intra.sdcc.bnl.gov/cdsagenda/askArchive.php?base=agenda&categ=a1599&id=a1599s1t41/moreinfo
Added a reference to this study on lines 150 - 152
“The direction of the beam polarization was found to be consistent with the vertical within statistical uncertainties.”

L190: How did you evaluate 10^-4 precision of the relative luminosity? Or please give a reference.
10^-4 precision came from propagating the statistical uncertainty through the R = L^\uparrow / L^\downarrow formula. The sum of the GL1P scalers was plugged in for both L^\uparrow and L^\downarrow and those sums were around 10^8 or larger, making the statistical precision of the relative luminosity about 10^-4

L192: Remove "full".
Done

L264: boxes -> bands
Done

Comments from Takao Sakaguchi

Overall:
(1) I can understand how the analysis was performed for this paper, but it will be better understood if sample invariant mass plots for pi0 and eta are shown, and the signal mass regions (AN^Sig), background mass region (AN^BG), and r are depicted. It would also be helpful to show the fits to the combinatorial background underneath the pi0 or eta. Since this paper is for PRD, some additional plots and description in the analysis section will help a lot.
Added Figure 1: invariant mass distributions around the pi0 and eta peak

(2) I suggest using \eta or \eta-meson consistently when describing \eta-mesons. I would even change neutral pions to \pi0 to be consistent.
All instances of \eta have been changed to \eta meson to make it more consistent

(3) I suggest making figures much larger, since this is for PRD. Most of the labels are also small.
Label sizes have been increased along with figure size

Specific:
(1) line 15: Purely perturbative calculations --> Perturbative QCD calculations
Changed to
“Next-to-leading order perturbative QCD calculations that only include spin-momentum correlations from parton scattering”

(2) line 22 - 41: The sentence was a bit hard to understand for non-experts like me. I suggest modification as follows:
"The first approach is to assume that the nonperturbative parton distribution functions (PDFs) and fragmentation functions (FFs) are dependent on transverse momentum. This is called transverse-momentum-dependent (TMD) approach, in which an observable are sensitive to a soft (kT) and a hard (Q) transverse momentum scale such that Lambda_QCD <kT<<Q. The Sivers TMD PDF correlates the nucleon transverse spin with the parton transverse momentum and produces a large TSSA. The Collins TMD FF correlates the transverse polarization of a fragmented quark to the angular distribution of hadrons with in a jet, and also produces a large TSSA."
Changed the wording to make it a little bit clearer, from:
“In the so-called transverse-momentum-dependent (TMD) framework, an observable must be sensitive to a soft (k_T) and hard (Q) momentum scale such that Lambda_QCD <kT<<Q.”
To:
“In this so-called transverse-momentum-dependent (TMD) framework, these functions depend on a soft (k_T) and hard (Q) momentum scale such that Lambda_QCD <kT<<Q.”

(3) line 48: "nonperturbative transverse ... such that Lambda_QCD<<Q" This sentence is very ambiguous. What is the relative difference between nonperturbative transverse momenta and one sufficiently large momentum? It may be useful to show an equation or something to explain this.
Changed from:
“The twist-3 approach can be used to describe observables integrated over nonperturbative transverse momenta in which only one sufficiently large momentum scale is measured, such that Lambda_QCD<<Q.”
To:
“This approach applies to observables in which only one sufficiently large momentum scale (Q) is measured, such that Q >> Lambda_QCD.”

(4) line 50: Probably I'm just lazy and I should go through the ref[11], but I simply don't understand what's done in the framework from this sentence. For instance, "process-dependence of some nonperturbative functions ..." doesn't tell me what they are.
Changed from:
“Here the process dependence of some nonperturbative functions due to initial- and final-state interactions with remnants is included in a perturbative functions in order to keep the parton correlation functions process independent [11]”
To:
“In order to keep the multiparton correlation functions process-independent, the initial- and final-state interactions between the struck parton and the proton remnants are included in the hard perturbative part of the twist-3 collinear factorization [11].”

(5) line 64: to describe observed inclusive hadron asymmetry
Done

(6) line 72: When I read this sentence, it sounded to me that it describes two findings from SIDIS and DY measurements which are not relating each other. If this is the case, the sentence should be split into two; a) about modified universality, and b) nonzero asymmetry.
Changed to make it more clear that the sentence is relating to modified universality:
“Both SIDIS and DY measurements have shown that certain TMD PDFs are consistent with modified universality provided that effects from TMD evolution with the hard scale Q are small [14,15] and that interactions in the initial or final state can produce nonzero asymmetries [16-19].”
(Added “Both” to the beginning of these sentences, “if” -> “provided that”)

(7) line 92-109: This paragraph argues that the not all TSSAs observed so far are explained by two approaches. I wondered, on the other hand, what TSSAs have been explained by which approach. I believe it is helpful for readers if you summarize the status of theoretical and experimental comparison (how they are compared in different approach), before this paragraph.
Added a paragraph that summarizes the latest understanding of the connections between the collinear twist-3 and TMD approaches:
“Since the inception of the collinear twist-3 and TMD factorization pictures, there has been theoretical evidence that they could combine to form a unified picture of TSSAs in hard processes. This concept was recently tested with the first simultaneous global analysis of TSSAs in SIDIS, DY, \(e^+ e^- \) annihilation, and proton-proton collisions[11]. This study used quark TMD PDFs and FFs to describe the asymmetries in processes that are sensitive to the soft-scale momentum, i.e. SIDIS, Drell-Yan, and \(e^+ e^- \) annihilation. These TMD functions were also used to calculate collinear twist-3 qgq correlation functions which were applied to inclusive forward pion asymmetry measurements from RHIC. This simultaneous description of TSSAs across multiple collision species indicates that all TSSAs have a common origin that is related to multiparton correlations.”

(8) line 127: what do you mean by "two separate asymmetries"? Is this explained in the following sentence? if so, the following sentence should come before this sentence.
Changed to:
“there are two ways to measure the TSSA with the same data set”
Which the next sentence then clarifies

(9) line 138: "nearly back-to-back central" is vague and is not scientific. You should quantitatively state the phi coverage range.
Changed to: “The EMCal is located in two central arms, each covering $\Delta\phi=\pi/2$ in azimuth and $|\eta|<0.35$ in pseudorapidity, centered at $\phi=\pi/16$ and $15\pi/16$.”

(10) line 148: Please split into two sentences like: "The tracking system consists of a drift chamber that measures the momentum of tracks and pad chambers that measure the charged particle hit position. They are placed in front of the EMCal and are used to veto charged particles."
Changed from:
“A tracking system consisting of a drift chamber to measure track momentum and pad chamber stations to measure charged particle position [29] in front of the calorimeter and used to veto charged particles.”
To:
“A tracking system includes a drift chamber to measure track momentum and pad chamber stations to measure the charged particle hit position [29]. The measurement of the track positions in front of the calorimeter is used to veto charged particles from the photon sample.”

(11) line 158: The minimum bias trigger requires at least one charged particle hit in both the north and south side of the BBC
Changed from:
“The minimum bias trigger fires on crossings where at least one charged particle is measured in both the north and south sides of the BBC.”
To:
“The minimum bias trigger requires at least one charged particle to be measured in both the north and south sides of the BBC.”

(12) line 161: I think this sentence should come after the description of how the photons are identified in EMCal. Suggest to reorder between this sentence and line 166.
Done

(13) line 166: Suggest to rewrite as: "Photons are identified as the clusters in the EMCal which passed a shower profile cut." The sentence in the draft reads that you are applying several shower profile cuts to identify photons, which I don't think is the case.
Changed from:
“Photons are identified in the EMCal through shower profile cuts which suppress clusters from hadrons.”
To:
“Photons are identified as clusters in the EMCal and are required to pass a shower profile cut which suppresses clusters from hadrons.”

(14) line 173: You should mention that the pi0 mass and eta mass seen in EMCal is pt-dependent. Given that, the signal counting mass range changes as a function of pT?
Variations in the measured pT range are well within +/-1%, which is negligible compared to the mass window range used to integrate the signal. The background fraction doesn't change in any visible way, if such variations are taken into account.

(15) line 190: This sentence is hard to read. Does the <cos(phi)> correct for the limited acceptance of PHENIX to the full azimuth?
Changed from:
“The acceptance factor, <cos(phi)>, corrects for the fact that the asymmetry is being integrated over the azimuthal range of each arm,”
To:
“The acceptance factor, <cos(phi)>, takes into account the detector azimuthal coverage,”

(16) line 197: How the asymmetry is averaged? Weighted average by the statistical error? Please state if so.
Changed from:
“then averaged”
To:
“then the average weighed by the statistical error is taken for the final result”

(17) line 213: what are the fit functions? 1st-order polynomial? I think there is a systematic error associated with different fit functions. Is it studied and included in the total systematic error?
Added a description:
“The background fraction is calculated from fits to the invariant mass spectra where a Gaussian is used to describe the invariant mass peak, and the third order polynomial is used to describe the combinatorial background, as shown in the green curves in Fig. 1.”

The systematic error due to the background fraction was assigned by changing the fit regions not the fit functions. This analysis used the same fit functions that were used in PPG135

(18) line 241: Probably, the bunch-shuffling is a familiar and reasonable method for the experts, but to me, it sounded like "renormalization", which in principle the rest of unknown sources are swept into this. Yes, I admit that we always have systematic errors of unknown source, but at same time I don't see justification that this systematic error disappears above the lowest pT bin (all zero in Table 2 and 3). It's likely that this systematic error becomes just too small to see under the statistical fluctuation. Do you have any idea on this? Or, wouldn't it be safer and more reasonable to put the number at the lowest bin consistently over pT?
The larger bunch shuffling width in the lowest pT bin is related to the turn on efficiency of the ERT trigger and from EMCal detector noise which has a larger contribution in lower energy clusters.

(19) line 288: remove "for this asymmetry"
Done

(20) line 291: Suggest to rewrite as:
"The curve was obtained from the Ref[28] with limiting the rapidity range to the PHENIX acceptance"
Changed from:
“This curve was calculated with fits to forward pion asymmetries which were published in Ref. [11] and has been reevaluated for the |\eta| < 0.35 pseudorapidity range of this measurement.”
To:
“This curve was calculated with fits that were published in Ref. [11] and has been reevaluated in the rapidity range of PHENIX.”

(21) line 300: Remove "cleanly"
Done

(22) line 319: It is instructive for the readers to write out the equation here. Honestly, I couldn't associate the curves shown in Ref [29] and what you are mentioning here. I suggest that you just point to the corresponding curve (plot) in the Ref [29], and leave all other discussion off from the draft, if possible.

Changed phrasing from:

“which can be found in Equation 34 of Ref [32]”

To:

“the specifics of which can be found in Equation 34 of Ref [32]”

This curve is an updated version of the curves in Figure 1 of Ref [32] and incorporates the parameters stated Equation 34. Equation 34 of Ref [32] just states the specific values that are being plugged in to the parameters of their equation.

Comments from Sanghwa Park

L41: remove within a jet
Done

L87-91: Recent studies (for example, Phys. Rev. D89, 111501(R) (2014) or Phys.Lett. B 770(2017) 242-251) show twist-3 calculations reasonably describe the STAR data and noting that the fragmentation term plays a major role there. Perhaps reference one of the recent papers and rephrase.
Added sentence:
“Recent studies in the twist-3 framework have successfully described the p_T dependence of these forward asymmetries by including twist-3 effects in hadronization [cite Phys. Rev. D89, 111501(R) (2014)]”

Fig. 1, 2: single spin -> single-spin to be consistent
Done

L213: mention what functions you are using to fit to data
Added a description:
“The background fraction is calculated from fits to the invariant mass spectra where a Gaussian is used to describe the invariant mass peak, and the third order polynomial is used to describe the combinatorial background, as shown in the green curves in Fig.1.”

L255: dominates -> dominate
Done

Comments from Sookhyun Lee

L16 m_q/p_T --> m_q/sqrt(s)
Changed to m_q/Q
sqrt(s) might be confused with the center of mass of the pp collisions, sqrt(s) = 200 GeV.

L36-38 "a result of differences in color flow from interactions with remnants in the initial versus final states"

--> This sentence needs clarification. It is a result of the T-odd character of the Sivers TMD and the Wilson line (or color flow, which is needed in the definition of TMD PDF for gauge invariance.) pointing in the opposite direction in time between the two processes (future pointing for SIDIS and past pointing for DY).
Changed to:
“a result of differences in color flow from interactions with remnants in the initial versus final states, related to the PT-odd nature of the Sivers TMD PDF and the PT invariance of QCD”

L92-L106 Looking at references, it is clear that all these measurements were done at forward rapidity. It is still helpful to make this point clear somewhere in the text especially for eta/neutral pions.
Done

L172 "time-of-flight cut" of what ps?
Changed to “a time-of-flight cut of |TOF| < 5 ns.”

L181 and L201 Add a reference for these methods.
Cited PPG135 towards the beginning of this analysis section: “The data analysis procedure is similar to our previous measurements [5]”

L238 I'd drop "conservative" because it leaves room for further studies to reduce your systematic uncertainties.
Done

L241 Add a reference for the bunch shuffling method.
Cited PPG135 towards the beginning of this analysis section: “The data analysis procedure is similar to our previous measurements [5]”

L282 This statement is in contradiction to the one in L103.
Changed to:
“At forward rapidity, existing measurements [26, 30] do not yet clearly resolve whether the η meson asymmetry is larger than the π0 asymmetry as predicted in some models.[31]"