

Comments from Nicolas T.

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# HIN-18-018 :

--- TYPE A ---

- General : “quark and gluon jets” ? Or “quark- and gluon-initiated jets” ? Needs prior definition ?
- Intro : PbPb and pp in words ?
- l.3 : suffer -> undergo ?
- l.33 : reverts pp and Pb to be consistent with l.31 ?
- l.35 : “is defined in terms of...” ?
- l. 38 : “are unfolded to account for” ?
- l. 39,94 : “overlap between the” ?
- l.52-55 : need to explain eta and phi ? (“pseudorapidity”, “azimuthal”)
- l.55 : “region of” -> “region corresponding to” ?
- l.57 : “nominal IP” ?
- l.64 : “which is used” ?
- l.68 : “a distance parameter of”
- l.74 : “present” -> “reconstructed” ?
- l.93 : “given by” -> “corresponding to”?
- l.108 : “underlying events”?
- l.121 : “data and simulations” -> “and simulated events” ?
- l.127 : “tracks must have at least 11 hits” -> “tracks must be reconstructed from/associated with at least...”?
- l.129 : “a selection requirement of less than 3 sd” -> “for both collision systems, it is required that the significance... be less than 3 sd..., in order to decrease...” ?
- l.142 : remove “magnitude” or mention it also for pTjet ? idem “relative to beam axis” ?
- l.147,206 : dr -> dR (consistency)
- l.149 : “well resolved” -> “well simulated” ?
- l.150 : “Theoretical predictions suggest that [a parameter value]  $\kappa \sim 0.5$  is the most sensitive” ?
- l.152 : “to maintain” -> “, in order to retain” ?
- l.155 : “to compare with” -> “to allow for a comparison with” ?
- l.161 : “iteration method” -> “iterative method” ?
- l.162 : “for pp [collisions]” ?
- l.178 : “obtained with PYTHIA” ?
- l.180 : “is optimal in balancing the bias towards the MC distribution”  $\leftrightarrow$  ?
- l.185 : “in fitting” -> “to fit” ?
- l.186 : rephrase (“Measurements... make up the dominant proportions”) ; define e?
- l.194 : missing space “+hydjet”
- l.195 : at least rephrase “by varying the heavy quark jets” (-> “by varying the total fraction of...”?)
- l.198 : treatment of uncertainties already explained in Sec.8...?
- l.208 : “than in simulations obtained with pythia...” ? ; “increases with increasing centrality of the collisions”?
- l.228 : “cited” -> “quoted” ?
- l.230 : “evaluated” -> “considered” ? rephrase “in pp and ... in pbpb”
- l.232 : “fashion similar” -> “similar fashion”?
- l.249 : which “quantities”? rephrase?
- l.253-258 : already explained ? redundant ?
- l.270 : rephrase ; “distributions of the particle multiplicities within cones, chosen...” ?
- l.288 : “sample bin”?
- l.314 : “consolidated”?
- legend Fig.3 : “shown by” -> “represented by”?

- l.334, and throughout text : replace “measurements from Pythia/...” by “simulations...”?

--- TYPE B ---

- l.120 : What about multiple jets in PbPb events ?
- l.143 : give definition of K parameter, what it exactly corresponds to ? (if relevant)
- l.195 : why fix relative fractions of heavy quark jets ? need to reduce ndf in fit ?
- l.203 : "and the relative fractions of quarks and gluons for such jets are assigned directly from MC" -> justified ? refer to sec.8 where this syst is discussed ?
- l.216 : “extra correction factor” obtained how ?
- l.243 : what do the 4-7% refer to ? different bins ? idem l.251
- l.266 : not sure if clear enough... at least rephrase “jet [pt] spectrum”? “sit on” ?
- l.282 : not clear ; what exactly is varied, how much ?
- l.323 : “no significant modification” ↔ in contradiction with previous CMS observation of modification at low pt... (supporting jet quenching models) ? is there a possible/preferred explanation ?

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