

Dear Elena, Roberta and Torsten,

thank you very much for the draft - you have really performed a most admirable task, it is a wonderful summary.

I have looked at the sections you assigned me, and I find that they are fine as they are. Just a small latex-nical point: if you write fractions like  $dN/dx$  that way and not as  $dN\over dx$  or  $dN\frac{dx}{dx}$ , then they don't become so minute.

OK

I'm afraid I do have a criticism concerning the introduction, again on my favorite subject, calibrating quarkonium production. The sentence "...is expected to be significantly suppressed with respect to the proton-proton yield, scaled by the number of binary nucleon-nucleon collisions." is simply not correct. If, for whatever reason, the overall open charm/bottom production is different in AA re scaled pp, then this has to reflect on J/Psi production, whether there is suppression or not. The scaled binary nucleon-nucleon collisions are only a reference for quarkonia if total charm (or bottom) production in AA is binary scaled pp production.

The last sentence on page 1 is incorrect for the same reason.

How about "In a hot and deconfined medium, in fact, quarkonium production is expected to be significantly suppressed with respect to the proton-proton yield, scaled by the number of binary nucleon-nucleon collisions, \*as long as the total charm cross section remains unmodified.\*"

For the last sentence on page 1, I propose: "The  $\nu_{AA}$  is expected to be equal to unity if nucleus-nucleus collisions behave as a superposition of nucleon-nucleon interactions. **This is,  $\nu_{eg}$ , the case for electroweak probes (direct  $\gamma$ , W, and Z) that do not interact strongly**~\cite{Afanasiev:2012dg,Chatrchyan:2012vq,Chatrchyan:2012nt,Aad:2012ew,Chatrchyan:2014csa}. **Such a scaling is also assumed for the total charm cross section, although an experimental verification has large uncertainties at RHIC ( $\approx 25\%$ )**~\cite{Adare:2010de,Adamczyk:2014uip} **and is lacking at the LHC (see discussion in Section~\ref{sec:hf\_ref})**. In this case,..."

You discuss all kinds of effects (cold nuclear matter, CGC, etc.) on quarkonium formation, but implicitly assume always that open heavy flavor production is not modified in AA, re binary scaled pp. Perhaps a way out would be to simply state that and note that if this is not true, it will lead to consequences discussed in 2.4.1.

In this context: it seems that section is the only one addressing open heavy flavor. Would the title perhaps not better be just Quarkonium Production in the LHC Era?

All the best for now - see you soon in Trento, I hope.

Helmut

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This topic: ReteQuarkonii > Helmut

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