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Peer Review

Review of: "Exploring QGP-Like Phenomena with Charmonia in p+p Collisions at √s=13 TeV"

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The authors have proposed a review on Exploring QGP-Like Phenomena with Charmonia in p+p Collisions at √s=13 TeV. I would like to appreciate the main concept.

The manuscript deals with a detailed study on the bottom-up thermalization approach to determine the effective temperature of the QCD matter, followed by a Gubser-type expansion for the thermalized medium. Additionally, the authors consider collisional damping, gluonic dissociation, and regeneration mechanisms, which specifically modify the charmonium yield in the thermalized medium.

The overall results and discussions seemed sufficient to provide a more comprehensive understanding of QGP properties and charmonium dynamics in ultra-relativistic high-energy collisions. The findings suggest the potential for using charmonium suppression as a signature to detect thermalized QCD matter in multiparticle production dynamics. Given the literature in this field, the contribution of the work from the publication perspective is clear. In detail, its conclusion is well supported by all the presented analysis.

Therefore, the applicability of the proposed approach is comprehensive. The pp collisions, as the elementary one, are quite different from heavy-ion collisions in many aspects, especially in the formation of QGP. The studies could focus on developing the methodology for such observations to probe the existence of quark-gluon plasma in such a small collision system.

Therefore, I am writing to let you know that the manuscript is suitable for publication.

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Declarations

Potential competing interests: No potential competing interests to declare.