

J/ ψ production in Ru+Ru and Zr+Zr collisions at $\sqrt{s_{\text{NN}}} = 200$ GeV with the STAR experiment

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Abstract

1 J/ ψ is an important probe to study the properties of the quark-gluon plasma
2 (QGP) created in heavy-ion collisions. Measurements of J/ ψ yield suppression
3 in Au+Au collisions at $\sqrt{s_{\text{NN}}} = 200$ GeV suggest that J/ ψ production in heavy-
4 ion collisions is affected by the interplay of several effects, such as dissociation,
5 regeneration in the QGP, and the cold nuclear matter effects. Since all these effects
6 are expected to strongly depend on the system size, varying the collision system
7 provides a promising approach to study J/ ψ production in heavy-ion collisions.

8 In 2018, the STAR experiment collected a high statistics sample of isobaric
9 collisions ($^{96}_{44}\text{Ru}+^{96}_{44}\text{Ru}$ and $^{96}_{40}\text{Zr}+^{96}_{40}\text{Zr}$) at $\sqrt{s_{\text{NN}}} = 200$ GeV. In this talk, we will
10 present the precision measurements of inclusive J/ ψ production yields as well as its
11 elliptic flow from this data sample. These results will be compared to the similar
12 measurements in Au+Au and Cu+Cu collisions at $\sqrt{s_{\text{NN}}} = 200$ GeV and physics
13 implications will also be discussed.