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Charm-strange meson production by recombination in heavy ion collisions at \sqrt{s_{NN}}=5.02 TeV

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We discuss charm-strange mesons, Ds, Ds, *Ds0*(2317), Ds1(2460), and X(3915) mesons produced from charm and strange quarks in the quark-gluon plasma in heavy-ion collisions at \sqrt{s_{NN}}=5.02 TeV. We first investigate the transverse momentum distribution of charm and strange quarks at \sqrt{s_{NN}}=5.02 TeV in the quark-gluon plasma based on transverse momentum distributions of \phi and Dˆ0 mesons. Then, we calculate the yields and transverse momentum distributions of Ds, Ds, *Ds0*(2317), Ds1(2460), and X(3915) mesons. We demonstrate that our results agree well with experimental measurements for the Ds meson and argue that the strangeness enhancement has a significant impact on the production of charm-strange mesons in heavy-ion collisions. We also present, in particular, the transverse momentum distributions and yields of Ds0*(2317) and X(3915) mesons for their various possible states, and show how their yields and transverse momentum distributions depend on their internal structures.

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