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Two-dimensional distribution characteristics of ridge correlations in the glasma

We study two-dimensional distribution of ridge correlations in pp collisions at $\sqrt{s_{NN}} = 7$ TeV by using the color glass condensate (CGC) formalism. By subtracting the uncorrelated background constructed by the convolution of two uncorrelated single-gluon inclusive production, a upturned ridge structure in the long range rapidity region is obtained. This structure is qualitatively similar to that observed in CMS measurement [1]. Beyond that, we also compare with the background subtraction schemes used in ref. [23]. We find that the correlation trends under the two kinds of background subtraction schemes differ in the rapidity direction, especially at long range rapidity separation of the large rapidity window. By using the zero-yield-at-minimum (ZYAM) method, the azimuthal angle correlation under the two background subtraction schemes is almost the same, which means that the two background subtraction schemes do not alter the amplitude of the double peaks generated by the collimation production.

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