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DDbar and DD pair production at the LHCb in the parton Reggeization approach

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We study the inclusive DDbar and DD pair production in proton-proton collisions at the LHC at leading order of the parton Reggeization approach endowed with universal scale-depended fragmentation functions for c-quark to D-meson and for gluon to D-meson transitions. We have described DDbar and DD correlations in azimuthal angle, as well as transverse momentum, rapidity, and invariant mass distributions measured in the forward region of rapidity by the LHCb Collaboration at the LHC ($2 < y < 4$) without free parameters. We have used Reggeized amplitudes for the processes $RR \rightarrow gg$ and $RR \rightarrow c\bar{c}$ which are obtained accordingly to Feynman rules of the L.N. Lipatov effective theory of Reggeized partons, and Kimber-Martin-Ryskin model for unintegrated gluon distribution function in a proton with Martin-Stirling-Thorne-Watt collinear parton distributions as inputs.

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