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Gluon dipole factorization and saturation in diffractive dijet production

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Using the color dipole picture for DIS, we study the production of a pair of jets initiated by a quark and an antiquark, through coherent diffraction. The transverse momenta of the two jets are taken to be larger than the target saturation momentum. Then the typical final-state configurations are such that the hard dijets are accompanied by a semi-hard gluon jet, with transverse momentum of the order of the saturation momentum so that it scatters strongly. For these 2+1 jet configurations, we show that the emission of the semi-hard gluon and its subsequent scattering with the target are factorised in terms of a gluon-gluon dipole. The hard factor describes the hard dijets, while the semi-hard one stands for the unintegrated gluon distribution of the Pomeron. When integrating out the dijet imbalance, we obtain collinear factorisation where the initial condition for the DGLAP evolution is set by gluon saturation. Integrating the kinematics of all 3 jets, we obtain the quarkantiquark-gluon contribution to the diffractive structure function in collinearly-factorised form.

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