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## Heavy quarkonia and Drell-Yan gauge boson production in the color dipole picture

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We present an extensive phenomenological study of Drell-Yan and heavy quarkonia production at LHC and RHIC energies within the color dipole formalism. Using the Color-Singlet model (CSM) we calculate several different observables including quarkonia  $p_T$  spectra and rapidity/azimuth difference between  $J/\psi$  or  $Y$  and leading hadron in p-p and p-A collisions. Moreover, the gauge boson ( $Z^0, W^\pm$ ) production in association with hadron that fragments from the incoming quark is calculated, and then applied to study gauge boson-hadron correlations at LHC energies. This provides a complementary analysis tool to prompt-photon-hadron and hadron-hadron correlations within the color dipole formalism.

As a very promising measurement we suggest to study correlations between forward high- $p_T$  pion and  $J/\psi$  or  $Y$  produced at mid-rapidity at RHIC energies. Such forward-midrapidity correlations test higher order pQCD in pp collisions at modest energies. All suggested variables have a strong potential for better constraining CSM contribution to the  $J/\psi$  and  $Y$  production at RHIC and LHC.

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