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# Saturation and subnuclear structure from heavy flavour data

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The definitive confirmation of gluon saturation effects in high energy hadronic collisions is still outstanding. A promising route to pin down saturation effects is the simultaneous study of vector meson and charged hadron production. Heavy vector mesons, whose mass is of the order of magnitude of the saturation scale, are expected to be less sensitive to saturation effects than lighter charged hadrons. Then, varying the collision system and/or the vector meson rapidity one can probe different degrees of saturation systematically. In this talk, based on [1], we introduce a theoretical setup to compute $J/\psi$ and hadron production within the color glass condensate with energy evolution described by the running coupling Balitsky-Kovchegov equation. Unlike previous works, our setup includes geometric and saturation scale normalization fluctuations that dynamically generate the event-by-event multiplicity fluctuations of both hadrons and $J/\psi$. We find that these fluctuations strongly impact the degree of saturation effects. Overall, we demonstrate that experimental data on heavy-flavour production as a function of event activity, e.g. [2], provide stringent constraints on the fluctuating proton structure and, more generally, on saturation dynamics.

## Present via

Online

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