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Limiting fragmentation in the dilute Glasma

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The dilute Glasma is a novel approach to modeling the rapidity-dependent initial stage of ultra-relativistic heavy-ion collisions based on the Color Glass Condensate effective field theory. The gluonic interaction between the large Bjorken-x, static sources localized in the colliding nuclei is described by classical Yang-Mills equations. By performing an expansion in the weak sources, we are able to obtain remarkably simple, analytic solutions for the Glasma field strength tensor and evaluate them via Monte-Carlo integration. Within this setup, we employ a generalized McLerran-Venugopalan nuclear model with parametrized longitudinal correlations and study Pb+Pb collisions at LHC and Au+Au collisions at RHIC energies. In particular, we recover limiting fragmentation on the level of the energy-momentum tensor at RHIC and predict it to hold for LHC energies as well. In this contribution, I will compare this prediction to other initial state models and assess its compatibility with experimental data. I will also give an outlook for our analytic proof of the limiting fragmentation behavior and discuss that it is a generic feature of the dilute Glasma expansion.

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[1] Ipp, A., Leuthner, M., Müller, D. I., Schlichting, S., Schmidt, K., & Singh, P.
Energy-momentum tensor of the dilute (3+1)D Glasma. [2401.10320]

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