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3+1D observables in the dilute Glasma of relativistic heavy ion collisions

According to the Color Glass Condensate effective theory, the early stages of heavy ion collisions are described by a quasi-classical state called Glasma, whose dynamics are governed by the Yang-Mills (YM) equations. Extending prior work [1], we solve the YM equations analytically in the weak-field limit, which reduces the field strength tensor components to three-dimensional integrals. These integrals can then be evaluated numerically for different nuclear models. Specifically, we allow the nuclei to have finite extent in the longitudinal direction, which gives access to the non-trivial spacetime rapidity dependence of observables such as the energy-momentum tensor of the Glasma.

[1] A. Ipp, D. Müller, S. Schlichting and P. Singh, Phys.Rev.D 104 (2021) 11, 114040 [arXiv:2109.05028]

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