

Sphalerons and Axial Charge Production Out of Equilibrium

We report on a first computation of non-equilibrium sphaleron transitions in the Glasma created immediately after the collision of ultra-relativistic nuclei[1]. Based on classical-statistical real time lattice gauge theory simulations, we find that the rate of topological transitions is initially strongly enhanced relative to the thermal equilibrium sphaleron transition rate and decays with time during the thermalization process. We will also demonstrate how our simulations can be extended to include dynamical fermions [2], in order to compute the initial state production of axial charge — a crucial input for the ab initio dynamical modeling of the Chiral Magnetic Effect in heavy-ion collisions.

[1] M. Mace, S. Schlichting, R. Venugopalan Phys.Rev. D93 (2016) no.7, 074036 arXiv:1601.07342 [hep-ph].

[2] M. Mace, N. Mueller, S. Schlichting, S. Sharma, in preparation.

Preferred Track

Initial State Physics and Approach to Equilibrium

Collaboration

BEST

Primary author: MACE, Mark (Stony Brook University)

Co-authors: MUELLER, Niklas (Heidelberg University); SHARMA, Sayantan (BNL); SCHLICHTING, Soeren (University of Washington)

Presenter: MACE, Mark (Stony Brook University)

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