

Nonequilibrium axial charge production in expanding color fields

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By a high-energy collision of heavy-ions, strong color fields carrying nonzero topological charges are generated. Quark production in such color fields accompanies the production of axial charges. To find observable consequences of the chiral magnetic effect and related phenomena, first-principles calculations of the axial charge production at the early-stage of heavy-ion collisions are indispensable.

I will present first results for real-time lattice computations of the axial charge production from strong color fields in the longitudinally expanding geometry. The quantum dynamics of quarks is described by solving the Dirac equation under classical SU(2) gauge fields with an initial condition motivated by Glasma flux tubes. By employing the Wilson fermion extended to the expanding geometry, the axial anomaly is verified on the real-time lattice.

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