Contribution ID: **353**   Type: **Oral Presentation**

Full phase space simulation of the relativistic Boltzmann equation in the context of heavy-ion collisions

Wednesday, 27 June 2018 10:00 (20 minutes)

Relativistic hydrodynamics has been the tool of choice to simulate the dynamics of the quark-gluon plasma produced in heavy-ion collisions.
Despite the success of hydrodynamics, it has several shortcomings stemming from the fact that it assumes a system close to equilibrium.
An alternative to hydrodynamics is solving the Boltzmann equation, which describes the evolution of the full distribution function of the system without the close to equilibrium requirement.
The Boltzmann equation, however, has hitherto proved computationally intractable.
By using a novel algorithm, and leveraging the computational power, we numerically integrate the Boltzmann equation in the relaxation time approximation.

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Session Classification: Theoretical and Computational Physics

Track Classification: Track G - Theoretical and Computational Physics