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Dependence of QGP evolution on smearing velocity in HIC

High energy heavy ion collisions could be simulated by AMPT model. Employing a smearing function on parton in QGP, one can get the energy-momentum tensor at any field point. Then the evolution of QGP could be calculated, including its temperature field, velocity field, and vorticity field.

However, the velocity of smearing function is assumed as infinity in past calculation, which is unphysical obviously. In this work, we adopted an assumption that this smearing velocity being finite. Then we developed a calculation framework to study the QGP properties with the output of AMPT model. Our preliminary results show that the properties of QGP evolution are dependent on the smearing velocity significantly. In particular, the vorticity results with finite and infinite smearing velocity are quite different, which could help us to understand the sign puzzle on vorticity observed in experiment.

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