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Analysis of thermalization of semiclassical Yang-Mills field in expanding geometry with use of Husimi function

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We investigate the real time evolution of a highly occupied and weakly coupled Yang-Mills field in the expanding geometry using the semiclassical approximation, and study its thermalization in terms of the Husimi-Wehrl(HW) entropy that is defined by the Husimi function. The initial conditions are given to mimic the realistic grasma initial condition, where the color electric and color magnetic fields are boost-invariant and parallel to the collision axis. We also study the evolution of pressure isotropy and the change in the number of particles in order to discuss the relationship with the HW entropy. The results at $g = 0.1$ and 0.2 show that the HW entropy increases rapidly in the initial stage where the time evolution of pressure strongly depends on the initial condition and coupling constant. In the later stages, the HW entropy and the ratio of transverse to longitudinal pressure change slowly while maintaining a large pressure anisotropy. It is also shown that the generation of the HW entropy is associated with the production of particles.

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