

The fragment effects on shear viscosity and liquid-gas phase transition in nuclear plasma

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We simulated nuclear matter in a periodic box with an improved quantum molecular dynamic (ImQMD) model and extracted shear viscosity using the Gaussian thermostated SLLOD algorithm. As the mean field is switched on, fragments forming at low density and low temperature, shear viscosity is declined. And also a slope of the shear viscosity, the ratio of the number of free nucleons to that of the intermediate mass fragments and the mean mass of the largest fragments as functions of temperature are discussed. We found, in all cases, turning points lying in a critical temperature regions around $T \sim 8$ MeV, which can be signals of the liquid-gas phase transition.

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Primary author: Dr DENG, Xian-Gai (Fudan University)

Co-authors: Mr LIN, Hao (Michigan State University); Prof. DANIELEWICZ, Pawel (Michigan State University); Prof. ZHANG, Ying-Xun (China Institute of Atomic Energy); Prof. MA, Yu-Gang (Fudan University)

Presenter: Dr DENG, Xian-Gai (Fudan University)

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