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Total and partial shear viscosity of hadrons in Au+Au collisions at intermediate energies accessible to NICA

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We calculate the total and partial shear viscosity of hadrons produced in central gold-gold collisions at intermediate energies. For calculations of the collisions the transport model UrQMD is employed. The shear viscosity is obtained within the framework of Green-Kubo formalism. The hadron resonance gas (HRG) model is used to determine temperature and chemical potentials of baryon charge and strangeness out of the microscopic model calculations. Then, we determine the partial viscosity of main hadron species, such as nucleons, pions, kaons and Lambdas, by studying the relaxation of hot and dense nuclear matter in the box with periodic boundary conditions. It is found that the decrease of the beam energy from $E_{lab} = 40$~AGeV to 10~AGeV leads to rise of baryon shear viscosity accompanied by drop of shear viscosity of mesons. In contrast to that of non-strange hadron species, the shear viscosity of kaons and Lambdas remains independent on energy within the studied energy range. Its ratio over the entropy density increases with the drop of temperature and rise of baryon chemical potential.

The speaker is a student or young scientist

No

Section

1. Intermediate and high energies, heavy ion collisions

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