

Bulk viscosity of a pion gas and energy-momentum correlations

We address the bulk viscosity of a pion gas in kinetic theory.

Using Unitarized Chiral Perturbation Theory for the pion interaction we show how elastic collisions control the bulk viscosity at low

temperature and physical pion masses. The bulk viscosity vanishes in the limit of zero temperature, in agreement with non-relativistic arguments. The collision integral zero modes (corresponding to particle and energy conservation) are properly taken into account, as is the approximate pion chemical potential.

We also propose a way of measuring the bulk viscosity in correlations of the fluctuating part of the stress-energy tensor and show how an estimate can be obtained with data in heavy ion collisions at LHC or FAIR.

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