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Lattice study of "rate" observables in Quark-Gluon Plasma: viscosities and sphaleron rate

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Non-perturbative lattice computations, carried out in Euclidean space, are very powerful for determination of static observables. Numerical lattice methods can be also used for studying "rate" observables, which determine the rate of various processes in Quark-Gluon Plasma. The calculations are based on the Kubo relations, which relate these observables and the correlators of the corresponding operators. In this report we discuss non-perturbative lattice measurements of such quantities as shear and bulk viscosities, which describe the evolution of stress-energy tensor, and sphaleron rate, which gives the rate of topology-changing transitions in QGP. To invert Kubo relations we apply the state-of-art lattice methods. We discuss the final results and compare them with ones obtained by other methods.

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