Transport Coefficients of Relativistic Matter: A Detailed Formalism with a Gross Knowledge of Their Magnitude

The transport coefficients like viscosity and thermal conductivity are the integral parts of fluids. As the fluid velocity approaches the speed of light, one should incorporate the famous relativistic effects like mass-energy equivalence, time dilation etc. Typical examples of relativistic fluids include from the neutron star mergers, astrophysical jets in the largest scale to the tiniest droplet quark-gluon plasma (QGP), produced in Large Hadron Collider (LHC) and Relativistic Heavy-Ion Collider (RHIC) labs. A study on the theoretical aspects of the relativistic fluids with a special attention to the QGP has been conducted by the joint supervision of Dr. Sabyasachi Ghosh (Assistant Professor, Physics Department, IIT Bhilai) and Dr. Arghya Chatterjee (Assistant Professor, Physics Department, NIT Durgapur) along with their respective PhD students Mr. Ashutosh Dwibedi and Ms. Nandita Padhan. In this review type article they have summarized the recent developments in the relativistic fluid dynamics and the magnitude of the transport coefficients of the relativistic matter, produced in LHC and RHIC laboratories.

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