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Relativistic Fluid Dynamics in Heavy- Ion Collisions, Particle & Nuclear Astrophysics

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The analysis of two-particle correlations has provided the chief means for determining spatio-temporal characteristics of relativistic heavy ion collisions. We discuss the theoretical formalism behind these studies and the experimental methods used in carrying them out. Recent results from RHIC were put into context in a systematic review of correlation measurements performed over the past two decades. Conservation laws of hydrodynamics have been used and confirmed that the mass before collision is equal to the mass after collision, however, the laws of hydrodynamics are conserved. Various thermodynamic properties such as density, pressure, and velocity profiles were studied, and changes in the flow of gas (in Quark-Gluon Plasma) in the Sod-Tube models were observed from one point to another. The velocity showed a sharp increase with the gas flow.

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