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Bulk Viscous Effects on Relativistic Hydrodynamic Models of the Quark-Gluon Plasma AKIHIKO MONNAI, TETSUFUMI HIRANO, The University of Tokyo — The quark-gluon plasma (QGP) created at Relativistic Heavy Ion Collider (RHIC) is well described within the framework of ideal hydrodynamic models. Our next step is to develop the treatment for viscosity in relativistic hydrodynamics. We mainly discuss the effects of bulk viscosity because recent studies suggest that it becomes large near the pseudo-phase transition temperature. Viscous corrections are brought into QGP physics through (i) modification of the distribution δf and (ii) variation of the flow δu^μ and the hypersurface $\delta d\sigma_\mu$. In this work we determine the former uniquely in Grad's 14-moment method for a multi-component system. Effects of both shear and bulk viscosity on the QGP phenomena is discussed, along with the prospect for the consistent development of viscous hydrodynamic models to estimate δu^μ and $\delta d\sigma_\mu$. We see that bulk viscous effects can be large, and that they should be treated with care in constraining the transport coefficients and/or the equation of state with precision from experimental data.

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