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Attenuation of Dynamical Density Fluctuation around QCD Critical Point and its Phenomenological Implications YUKI MINAMI, TEIJI KUNIHIRO, Department of Physics, Kyoto University — We explore the dynamical density fluctuations around the QCD critical point (CP) using dissipative relativistic fluid dynamics in which the coupling of the density fluctuations to those of other conserved quantities is taken into account. We show that the sound mode which is directly coupled to the mechanical fluctuations is attenuated and in turn the thermal mode which comes from the entropy fluctuation becomes the genuine soft mode at the QCD CP, which is actually known for the liquid-gas transition point. A speculation is given on the possible fate of Mach cone in the vicinity of the QCD CP as a signal of the existence of the CP on the basis of the above finding. We also apply and extend the mode-mode coupling theory to the relativistic system to study the properties of the dynamical density fluctuation in the close vicinity of the QCD CP.

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