Relativistic hydrodynamic equations and effective Lagrangian from quantum field theory YOSHIMASA HIDAKA, Nishina Center, RIKEN, TOMOYA HAYATA, MASARU HONGO, Department of Physics, The University of Tokyo, YUKI MINAMI, Theoretical Biology Laboratory, RIKEN, TOSHIFUMI NOUMI, Theoretical Research Division, Nishina Center, RIKEN — We discuss dissipative relativistic hydrodynamic equations. Assuming a local Gibbs distribution as the initial one, we derive the relativistic hydrodynamics equations from quantum field theory. It is known that there is ambiguity of the choice of frames in the dissipative hydrodynamic equations. We frame-independently derive the first order equations, and discuss the frame dependence. We also derive the effective Lagrangian, and discuss the relation between our results and those in previous works that were phenomenologically derived.

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