Incomplete list of References for Aspects of QCD Thermodynamics and Kinetics

reported by Derek Teaney for

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I. LECTURE I: WHY VISCOSITY IS IMPORTANT IN HEAVY ION COLLISIONS AND HOW TO ESTIMATE IN QCD IN VARIOUS PHASES

1. The material is suitably reviewed in: D. A. Teaney, "Viscous Hydrodynamics and the Quark Gluon Plasma," arXiv:0905.2433 [nucl-th].

2. New data on higher harmonic flow can be found at the Qaurk Matter 2012 conference web site.

II. LECTURE II: ELEMENTS OF KELDYSH DIAGRAM TECHNIQUE, THE FLUCTUATION DISSIPATION THEOREM, AND BLACK HOLES IN AND OUT OF EQUILIBRIUM

1. These notes. Seriously – read and work through the part on the harmonic oscillator and then take a look at these refs:

2. A general (but complicated) ref on the real time formalism is, K. c. Chou, Z. b. Su, B. l. Hao and L. Yu, Phys. Rept. **118**, 1 (1985).

3. I found this useful: A. H. Mueller and D. T. Son, "On the Equivalence between the Boltzmann equation and classical field theory at large occupation numbers," Phys. Lett. B **582**, 279 (2004) [arXiv:hep-ph/0212198].

4. "Deriving Boltzmann" see P. B. Arnold, D. T. Son and L. G. Yaffe, "Effective dynamics of hot, soft nonAbelian gauge fields. Color conductivity and log(1/alpha) effects," Phys. Rev. D **59**, 105020 (1999) [arXiv:hep-ph/9810216]. The appendix is based on Landau Lifshitz physical kinetics.

5. C. Greiner and S. Leupold, "Stochastic interpretation of Kadanoff-Baym equations and their relation to Langevin processes," Annals Phys. **270**, 328 (1998) [arXiv:hep-ph/9802312].

6. S. Caron-Huot, P. M. Chesler and D. Teaney, "Fluctuation, dissipation, and thermalization in non-equilibrium AdS_5 black hole geometries," arXiv:1102.1073 [hep-th].

III. LECTURE III: MORE ABOUT BOLTZMANN IN EXTERNAL NON-ABELIAN FIELDS, AN OVERVIEW OF KINETIC THEORY OF HOT QCD

1. Very consistent notation and pedagogical, but requires work: J. P. Blaizot and E. Iancu, "The Quark gluon plasma: Collective dynamics and hard thermal loops," Phys. Rept. **359**, 355 (2002) [arXiv:hep-ph/0101103].

2. Clarified a lot of things for me: S. Caron-Huot, "Hard thermal loops in the real-time formalism," JHEP **0904**, 004 (2009) [arXiv:0710.5726 [hep-ph]]. This paper formed the framework for computing the heavy quark diffusion coefficient at next to leading order.

3. S. Caron-Huot and G. D. Moore, "Heavy quark diffusion in QCD and N=4 SYM at next-to-leading order," JHEP **0802**, 081 (2008) [arXiv:0801.2173 [hep-ph]].

4. P. B. Arnold, G. D. Moore and L. G. Yaffe, "Transport coefficients in high temperature gauge theories. 2. Beyond leading log," JHEP **0305**, 051 (2003) [arXiv:hep-ph/0302165].

5. P. B. Arnold, G. D. Moore and L. G. Yaffe, "Effective kinetic theory for high temperature gauge theories," JHEP **0301**, 030 (2003) [arXiv:hep-ph/0209353].

6. P. B. Arnold, G. D. Moore and L. G. Yaffe, "Photon and gluon emission in relativistic plasmas," JHEP **0206**, 030 (2002) [arXiv:hep-ph/0204343].