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TRANSPORT COEFFICIENTS AND LOW ENERGY EXCITATIONS  
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# TRANSPORT COEFFICIENTS AND LOW ENERGY EXCITATIONS OF A STRONGLY INTERACTING HOLOGRAPHIC FLUID

N. Poovuttikul

$$\tau_{\parallel} = \frac{2m^2}{N_c^2} \left( \frac{v}{2\pi\sqrt{w}} \right),$$

$$\mathcal{J}_{5,CS}^{\mu} = 2\kappa A_t B_5^{\mu} + 2\gamma V_t B^{\mu} + \left( \kappa A_t^2 + \lambda \frac{g(r^2, f')^2}{2f} \right) \omega^{\mu}$$

$$S = \frac{N_c^2}{8\pi^2} \left[ \int d^5 X \sqrt{-G} \left( R + 12 - \frac{1}{3e_H^2} H_{abc} H^{abc} \right) + \int_{\partial M} d^4 x \sqrt{-g} \left( 2 \text{Tr} K - 6 + \frac{1}{e_H^2} \mathcal{H}_{\mu\nu} \mathcal{H}^{\mu\nu} \ln C \right) \right],$$

$$\tau_{\perp} = \frac{2\pi^2}{N_c^2} \left( \frac{\sqrt{w}}{2r_h} \right) \left( \frac{b_{\perp}(\frac{L}{2})}{b_{\perp}(0)} \right)^2,$$

$$\lim_{\omega \rightarrow 0} \omega^{-1} \text{Im} G_{T^{\mu\nu}}^R(\omega, 0) < s/4\pi$$

$$\frac{\omega^2}{k^2} = \left( \frac{\mu\rho \cos^2 \theta}{\varepsilon + p} \right) - i \left[ \left( \frac{\mu r_{\perp}}{\rho} + \frac{\eta_{\parallel}}{\varepsilon + p} \right) \cos^2 \theta + \left( \frac{\mu r_{\parallel}}{\rho} + \frac{\eta_{\perp}}{\varepsilon + p} \right) \sin^2 \theta \right] \omega + \frac{\mu}{2\rho(\varepsilon + p)} (r_{\perp} \cos^2 \theta + 2r_{\parallel} \sin^2 \theta) (\eta_{\perp} \sin^2 \theta + \eta_{\parallel} \cos^2 \theta) k^2.$$

$$\sigma_{J_5\omega} = \kappa\mu_5^2 + \gamma\mu^2 + 2\lambda(2\pi T)^2$$