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## Introduction to Gauge/Gravity Duality

### Examples X

To hand in Friday 20th January in the examples class

#### I. Shear viscosity over entropy density

Write an essay about the ratio of shear viscosity over entropy density. Explain how this ratio is calculated within gauge/gravity duality and discuss the physical significance of this result.

Recommended literature:

D. T. Son and A. O. Starinets, “Viscosity, Black Holes, and Quantum Field Theory,” *Ann. Rev. Nucl. Part. Sci.* **57** (2007) 95 [arXiv:0704.0240 [hep-th]].

P. Kovtun, D. T. Son and A. O. Starinets, “Viscosity in strongly interacting quantum field theories from black hole physics,” *Phys. Rev. Lett.* **94** (2005) 111601 [hep-th/0405231].

(10 pts)