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Shear viscosity to entropy density ratio in gravity analogue models

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The shear viscosity to entropy density ratio, eta/s, is one of the quantities of central interest in quantum field theories. Within the AdS/CFT correspondence, it has been conjectured by Kovtun, Son and Starinets that a universal lower bound 1/4pi exists. We present a new perspective on this matter in the framework of analogue gravity models, focusing on relativistic fluids with transonic flow. Quantum fluctuations at the acoustic horizon,
the fluid analog of the event horizon of a black hole, result in a thermal radiation of phonons, the sonic analog of the Hawking radiation. Adopting a covariant relativistic kinetic theory, we describe the Hawking emission as a
dissipative process. Neglecting phonon's self interactions, we find the saturation of eta/s. We connect the KSS bound
to the absence of a gap in the low energy spectrum of long-wavelength excitations.

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