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# Temperature fluctuations induced by turbulent dissipation

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## Abstract

In practically every fluid flow, kinetic energy is converted into heat through viscous friction. In a turbulent flow this heat is generated in an inhomogeneous matter and the temperature distribution in the fluid will subsequently not be uniform. We investigate these temperature fluctuations in isotropic turbulence. It is shown by numerical simulations and theory how these fluctuations interact with the turbulent flow that generated them. The intermittent nature of the dissipation rate fluctuations is shown to play a fundamental role in the physics of viscous heating.

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