Dissipative momentum: an experimental study

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What is the relationship between thermodynamics and mechanics? Thermodynamics can be traced back to mechanical phenomena, as we know in the case of rarefied gases. Conversely, non-equilibrium thermodynamics is a framework theory in which mechanics is an equal partner to other theories, such as electrodynamics. Using thermodynamic methods, we can obtain the evolution equations of internal variables, and in the case of dual internal variables, thermodynamic methods lead to evolution equations characteristic of mechanics. Thermodynamic principles can also be applied to point mechanics. However, the resulting equations contain a dissipative momentum term that cannot be recognised from the perspective of mechanics. The question is whether this difference can actually be demonstrated experimentally. In this presentation, I will introduce the experimental equipment designed for this purpose.