

Abstract Submitted  
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**Brownian motion in the presence of temperature gradients. Sedimentation-equilibrium phenomena in single-component fluids**  
HOWARD BRENNER — Einstein’s theory of Brownian motion, which addresses only isothermal fluids, is here extended to situations in which the fluid is subject to an externally imposed temperature gradient. This extension involves adding a temperature-gradient animated “drift velocity”  $\mathbf{U}_D$  to the diffusive Brownian contribution  $D$  appearing in the Fokker-Planck equation governing the coarse-grained conditional probability density. The *ansatz* underlying the theory is derived by elementary sedimentation-equilibrium-type arguments of the type invoked by Einstein in his classic 1905 paper. The underlying theory is supported by experimental thermophoretic data, as well as by a recent theory of diffusive volume transport.

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