

The Fluctuation Relations applied to an optical trapping system

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The fluctuation theorem and the work relation are exact non-equilibrium thermodynamic relations developed almost two decades ago. In the intervening time these relations have been extended by a variety of relations including the dissipation theorem, the relaxation theorem, the maximum likelihood estimator and various phase function representations. We take one of the early systems used to study these relations, the optical trapping system, and demonstrate that both the old and new relations can be successfully applied to the system.

Key words: fluctuation theorem, work relation, dissipation theorem, relaxation theorem, optical trapping system