

CHAPTER OVERVIEW

5: Fluctuations

This chapter discusses fluctuations of macroscopic variables, mostly at thermodynamic equilibrium. In particular, it describes the intimate connection between fluctuations and dissipation (damping) in dynamic systems weakly coupled to multi-particle environments, which culminates in the Einstein relation between the diffusion coefficient and mobility, the Nyquist formula, and its quantum mechanical generalization – the fluctuation-dissipation theorem. An alternative approach to the same problem, based on the Smoluchowski and Fokker-Planck equations, is also discussed in brief.

- [5.1: Characterization of Fluctuations](#)
- [5.2: Energy and the number of particles](#)
- [5.3: Volume and Temperature](#)
- [5.4: Fluctuations as functions of time](#)
- [5.5: Fluctuations and Dissipation](#)
- [5.6: The Kramers problem and the Smoluchowski equation](#)
- [5.7: The Fokker-Planck Equation](#)
- [5.8: Back to the correlation function](#)
- [5.9: Exercise problems](#)

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