

Material for Week 11

Physics 4488/6562: Statistical Mechanics

<https://sethna.lassp.cornell.edu/Teaching/562/>

Exercises due Mon. Apr 18

Last correction at January 11, 2022, 9:15 pm

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This chapter is more formal and theoretical. The pre-class exercises are more challenging than normal – you may wish to use Mathematica for some of the integrals, although all can be done by hand using contour integration.

Monday

In-class question: [10.13](#) *Onsager regression hypothesis*

Wednesday

Read: Chapter 10, Sec. 10.5 (Susceptibility and linear response) and 10.6 (Dissipation and the imaginary part)

Pre-class question: [10.14](#) *Liquid dynamics*

In-class question: [10.15](#) *Harmonic susceptibility, dissipation*

Friday

Read: Chapter 10, Secs. 10.7 (Static susceptibility), 10.8 (The fluctuation-dissipation theorem), and 10.9 (Causality and Kramers-Krönig)

Pre-class question: [10.18](#) *Harmonic Kramers-Kronig*

In-class question: [10.16](#) *Harmonic fluctuation-dissipation*

Monday

Read: Chapter 11, Sec. 11.1 (Stable and metastable phases) and 11.2 (Maxwell construction)

Pre-class question: [11.11](#) *Unstable to what?*

Exercises for everyone (4488 and 6562)

[10.17](#) *Susceptibilities and correlations.*

Exercises for Graduate Course (6562 only)

[10.5](#) *Telegraph noise in nanojunctions.*

[10.9](#) *Quasiparticle poles and Goldstone's theorem.*