

## Material for Week 10

Physics 4488/6562: Statistical Mechanics

<http://www.physics.cornell.edu/sethna/teaching/562/>

Exercises due Mon. Apr 20

Last correction at April 18, 2020, 12:00 pm

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For Wednesday, do parts (a,b) of the first pre-class question, *XY model topological defects*, and part (a) of the second one, *Nematic defects*. For Friday, do part (a) of the pre-class question, *Human correlations*.

### Monday

In-class question: [9.6](#) *Symmetries and wave equations*

### Wednesday

Read: Chapter 9, Sec. (9.4) (Classify the topological defects)

Pre-class question: [9.2](#) *XY defects*

Pre-class question: [9.1](#) *Nematic defects*

In-class question: [9.1](#) *Nematic defects*

### Friday

Read: Chapter 10, Sec. 10.1 (Correlation functions: motivation)

Pre-class question: [10.10](#) *Human correlations*

In-class question: [10.10](#) *Human correlations*

### Monday

Read: Chapter 10, Sec. 10.3 (Equal-time correlations in the ideal gas) and 10.4 (Onsager's regression hypothesis and time correlations)

Pre-class question: [10.12](#) *Liquid free energy*

## Exercises

Everyone (4488 and 6562)

[9.17](#) *Fingerprints.*

[9.16](#) *Can't lasso a basketball.*

[10.11](#) *Subway bench correlations.*

Graduate (6562 only)

[9.7](#) *Superfluid order and vortices.*

[9.14](#) *Sound and Goldstone's theorem.*