

Material for Week 10

Physics 4488/6562: Statistical Mechanics

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

Exercises due Wed. Apr 13

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

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- Our in-class exercises on Wednesday will involve computer simulations. They should run on tablets and smart phones as well.
- For Friday, only do part (a) of the pre-class question, *Human correlations*. We shall do the rest in class.
- Chapter 10 is more challenging mathematically than the rest of the course, and the pre-class questions starting next Monday will be more challenging.
- Because of Spring Break, this homework is due on Wed. Apr. 13. Please do the pre-class questions for Monday and Wednesday before class, but turn them in with this problem set. The pre-class exercise for the Monday after break is 10.12, *Liquid free energy*; the one for the Wednesday after break is 10.14, *Liquid dynamics*.

Monday

In-class question: 9.1 *Nematic defects*

Wednesday

Read: No reading today

Pre-class question: 9.13 *Chiral wave equation*

In-class question: 9.18 *Defects in crystals*

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 for everyone (4488 and 6562)

9.17 *Fingerprints.*

9.16 *Can't lasso a basketball.*

Exercises for Graduate Course (6562 only)

9.7 *Superfluid order and vortices.*

9.14 *Sound and Goldstone's theorem.*