Read Ashcroft and Mermin chapter 2 and appendices B and C along with Silsbee and Dräger sections 7.1 and 7.2. We’ll defer until later a discussion of quantum transport in an electric field.

Note: later in the term, the frequency of the homeworks will decrease, but their length will increase.

1. A&M 2.1
2. A&M 2.2 (involved: do as much as you can)

3. This should be much shorter than last week’s computer exercises; each part can be answered with a few minutes’ work and in one or two sentences.

   3a. S&D 7.2. You do not need to hit “run” for this exercise. You can check your answer with the “configure” box, so the point is to explain what you did. (When you move the mouse cursor around in the display on the left, text below the display measures your position.)

   3b. Now explain what happens when you change the “$E_{\text{Fermi}}$” slider. Verify numerically that $k_F$ changes appropriately.

   3c. Silsbee and Dräger do not include a temperature slider in this simulation (why not?). Make sure preset 1 is loaded ($\mathbf{E} = \mathbf{B} = 0$), then hit the “run” button. From the display on the left (rather than anything in the graph on the right), make a very rough estimate of the temperature.