

University of Kentucky, Physics 520
Homework #4, Rev. A, due Friday, 2015-09-23

0. Griffiths [2ed] Ch. 1 #5, #6, #7, #8. #9, #15. #16. #18.

1. Calculate and plot the **Fourier transform** $\psi(x) = \int_{-\infty}^{\infty} dk A(k)e^{ikx}$ of a square frequency distribution $A(k) = A_0$ if $k_1 < k < k_2$ and 0 otherwise. Calculate the uncertainty Δk in frequency. Show that the Heisenberg uncertainty principle holds for this wavefunction, but very badly!