The second mid-term exam will be held from 6:15 to 8:15 p.m. on Friday, April 5 in NPB 1101.

The exam will cover all material discussed in the course up to and including the partial wave treatment of scattering. The emphasis will be on time-dependent perturbation theory and scattering. A list of topics, cross-referenced to the course texts, appears on the Web at www.phys.ufl.edu/~kevin/teaching/6646/02spring/topics.html.

You will be allowed to consult Shankar, your lecture notes, and homework solutions (yours or mine). No other written/printed materials will be permitted.

The exam will likely consist of two questions, of roughly equal weight. The questions will test your ability to apply the concepts covered in the course to unfamiliar situations. Calculations will be involved, but these will be designed to be much less laborious than the ones assigned for homework.

The following questions may be good practice for the exam:

1. Shankar Exercise 18.2.2.

2. Shankar Exercise 18.2.4.
   In my copy of Shankar, this exercise states that the ion $^3\text{He}^+$ contains two protons plus one neuron in its nucleus. However, you should answer the question using the more conventional definition of $^3\text{He}^+$.

3. An electron is contained in a rigid cubic box with sides of length 3 Å. The electron is in its first excited state. Then the sides of the box are slowly reduced to 2 Å. How much work is performed during the compression of the box? Give your answer in eV.

4. Shankar Exercise 18.5.2.

5. Shankar Exercise 19.3.1.

6. Shankar Exercise 19.3.3.

7. Shankar Exercise 19.5.1.