

Reading as noted below. Problems are due on Monday, November 20, at 4 p.m. in my box.

Reading

- For Tuesday 11/14: Townsend §9.1 – 9.6.
- For Thursday 11/16: Townsend §9.7 – 9.9.
- For Tuesday 11/21: Townsend §10.1 – 2.

Problems

1. Townsend problems 7.9, 7.12, 7.14, 7.22.
2. Find the position-space representation of the $n = 3$ and $n = 4$ energy eigenstates of the 1-D harmonic oscillator.
3. Add the $n = 3$ and $n = 4$ eigenstates to the MATLAB file Harmonic012.m, downloadable from our website, and adjust the static plots at bottom to include the new eigenstates. Create an even superposition of the $n = 3$ and $n = 4$ eigenstates and save the resulting movie (.avi) file. Then create an even superposition of the $n = 0$ and $n = 1$ eigenstates and save the resulting .avi file. What differences do you notice between the two scenarios? Discuss with reference to the expected energy $\langle E \rangle$ for each scenario and the result of problem 7.9. Email me your .avi files.
4. Townsend problems 9.3, 9.5, 9.9-12, 9.20-21.