Quantum Physics, Preparation for Friday, Jan. 12

Finish Q1 from *Six Ideas*

We are using both classes this week to do the first chapter to get our feet on the ground. Most of Moore's chapters are designed to be the right amount for a single class, but there is a quite a bridge to be built between the end of Volume N and the beginning of Volume Q.

Look Ahead to Q2.1 from *Six Ideas*

We'll save most of Q2 for Tuesday, but read the first section to get going on it.

Study "The Bridge"

I welded several handouts together into a handout I called "The Bridge." The bridge is how we get from the simple harmonic oscillator to classical waves in continuous systems.

Presentations

No presentations

For Problem Set 1

1. Go to the last page of "The Bridge" handout. The last equation was $\Lambda \frac{d^2 w}{dt^2} - K \frac{d^2 w}{dx^2} = 0$. (a) Define $K/\Lambda \equiv v^2$ and rewrite the equation with v in it instead of K and Λ. (b) Show that $A \sin(kx - \omega t)$ can solve the equation. (c) What relationship among k, ω, and v must be true for this to be a solution. (d) Is it obvious to you that $B \cos(kx - \omega t)$ also satisfies the equation and also $C \cos(kx - \omega t + \phi)$ and also any combination of these solutions?

2. Q1B.6 Phase Speed

3. Q1B.9 Faint Sunlight at Pluto

4. Q1B.12 Ambulance Doppler Shift

5. Q1D.1 The wave speed for transverse waves on a string