Announcement-2/24/03

- As I said in my e-mail on Sunday, the book has an unfortunate typographical error for Equation 12-62, incorrectly adding a factor of 2 to the Laplacian. You should therefore correct your class notes from Friday, February 21, to read as follows:

  In spherical coordinates, $\nabla^2 = \frac{\partial^2}{\partial r^2} + \frac{1}{r}\frac{\partial}{\partial r} + \frac{1}{r^2}\Lambda^2$

  So, for the particle on a sphere, where r is fixed, the Hamiltonian simplifies as follows:

$$\hat{H} = -\frac{\hbar^2}{2m}\frac{1}{r^2}\Lambda^2 = -\frac{\hbar^2}{2I}\Lambda^2$$

  and the Schrodinger equation is

$$-\frac{\hbar^2}{2I}\Lambda^2\psi(\theta,\phi) = E\psi(\theta,\phi)$$

  Note that this Schrodinger equation for the rotational kinetic energy of a particle trapped on a sphere (written correctly) is completely analogous to the Schrodinger equation one would write for the kinetic energy of a particle trapped in an infinite well:

$$-\frac{\hbar^2}{2m}\frac{\partial^2}{\partial x^2}\psi(x) = E\psi(x)$$