Quantum Mechanics: Wheeler: Physics 6210

Assignment 13

READ: Chapter 4, pp 248 - 282. There are three main topics here: Parity, Lattice symmetry, and Time reversal. There are also some applications of these discrete symmetries.

PROBLEMS:

- S.4.1: Keep this simple. This is a one-dimensional problem. Note that the wave function for the three particles is just the product of the individual wave functions, and the Hamiltonian is the sum of the individual Hamiltonians. Therefore, inside the well where the potential vanishes the energy operator is just: $H = \sum \frac{p_i^2}{2m}$, where p_i is the momentum of the ith particle. The point of the problem is just to show that the degeneracy of a system can depend on the number, N, of particles in the system, and to get some feel for the form of the dependence.
- S.4.6.
- S.4.7: These questions are both just a matter of checking the action of the time reversal operator on the given states.
- **S.4.8**: Like S.4.7.
- S.4.12: A nice, direct quantum mechanics problem. This is similar to problem S.3.29.2.