Modern Physics: Test IIb: 2006: Open Book, Open Notes, Open Discussion

(1)
(a) Write down the ground state and the first excited state wave functions and the corresponding energies of a particle (mass unity) in a 2-dimensional square box of length unity. Also calculate the degree of degeneracy of the ground and excited state.

(b) Do the same problem (same as (a)) for the two-dimensional harmonic oscillator of mass and frequency both equal to unity.

(2) research on the web, ”Hanbury Brown and Twiss Effect” and prepare two to five minute talk to be given in the next class.