

Homework #12 (due Dec. 2)

Each problem is 10 points

Textbook problems: 14.1, 14.11

Problem A1: Calculate the energy carried by a single green photon. Estimate the photon flux from a typical green laser pointer with output power about 1mW.

Problem A2: Calculate the value of a single photon electric field for a photon with energy 1eV. Compare it (to the order of magnitude) to electric field acting on an electron inside a hydrogen atom.

Problem A3: For a coherent state with an average number of photons $\alpha=3$, what is the probability to detect exactly (a) 1 photon, (b) 3 photons, (c) 10 photons?