φ507 MidTerm Preview

The φ507 Mid Term Exam will be given 3–5 PM, Mon. 3/21/94, in AJM $\frac{2}{3}0$.

Material covered is that in CLASS NOTES on stationary-state perturbation theory, pp. SS 1-16; time-dependent perturbation theory, pp. tD 1-23; nonrelativistic H atom, pp. H 1-14; angular momentum, pp. A ①-⑱; magnetic interactions & atomic fine structure, pp. fs 1-19 ... in all, lectures through 3/9/94.

The exam consists of 5 problems, worth 180 points total. The problem areas are:

① Spin transitions induced by a rapidly changing magnetic field.

② A relation between radial matrix elements for the H-like atom.

③ Exploitation of an invariance property to solve a QM system.

④ Further properties of the ladder operators $J_\pm$ for a QM $\not\!\!A$ momentum $\mathbf{J}$.

⑤ Fine structure in an exotic atom.

Two of the problems are "shorties", so this is not as bad as it looks.

The exam is open-book, open-notes. You may bring to the exam:

1. One QM text of your choice.

2. Class notes, problems & solutions.

3. A math reference, calculator, and dictionary.

May your studies lie strictly on the diagonal. // Good luck,

Dick Robiscoe