

## Homework #2

(due Wednesday, April 23, 2024)

1. (15 pts) Read through 1.7 of B&J. Use information in Fig. 1.16 and Table 1.2 to solve problem 1.15 in B&J. Compare your result to the experimental results in PRL 1974 by Hansch et al.
2. (15 pts) Read through pp. 119-122 of B&J to solve problem 2.22 in B&J. Hint: present  $X$  in the perturbation in terms of creation and annihilation operators.
3. (10 pts) Read through 4.6 of B&J to solve problem 4.8 in B&J.
4. (20 pts) Calculate relative intensities of the first two emission lines of the Lyman series in hydrogen atom, in the electric dipole approximation.
5. Reading assignment: Chapter 4 of B&J.