

NORTHERN ILLINOIS UNIVERSITY

PHYSICS DEPARTMENT

Physics 283 – Modern Physics

Spring 2023

Problem Set #7

Problem Set Due: Thurs., March 23, 2023

Read Krane: Chapter 6.4-6.5, 7.1-7.2

There will be a Quiz #2 on Tuesday, March 28

Chapter 6

1. Krane: **Problem 21** page 204 (just show calculation)

2. Krane: **Problem 25** page 204
sketch the energy level transition for each case (see Fig. 6.20).

3. Krane: **Problem 28** page 204

4. Krane: **Problem 42** page 205-206

You may apply nonrelativistic mechanics to solve this problem.

Also, draw the scattering diagram for this problem (the “before” and “after” scattering pictures along with their energies and momenta)—assume that the atom is initially stationary.

Chapter 7

5. Krane: **Problem 1** page 233 (just show calculation)

6. Krane: **Problem 2** page 233 (sketch the probability density)

7. Krane: **Problem 4** page 233 (draw figure—see Fig. 7.3)