

PHYS3710 Short experimental projects I
Department of Physics
The Chinese University of Hong Kong, Hong Kong

Topic: Saturation Spectroscopy

designed by
Prof. D.J. Wang
(January 2015)

Topics you should know first:

Atomic structure of alkali atoms; absorption and saturation absorption spectroscopies.

Objectives:

1. Understand the equipment (Tunable Diode Laser, optical elements, Rb cell, Oscilloscope, photodetectors).
2. Setup the equipment to demonstrate saturation spectroscopy of Rb.

Check-list for the project:

1. Observe Laser safety!
2. Read references 1. Understand the theory of absorption and saturation absorption spectroscopies and relevant equations.
3. Setup the pieces of equipment according to reference 1.
4. Learn the techniques of laser alignment.
5. Measure the energy levels of Rb-85 & Rb-87 atoms and compare with accepted values.

References:

1. Teachspin, Inc. “Diode Laser Spectroscopy” manual.

Reference folder is available.