

Phys 4910 Spectroscopy

Neon Spectra Anyone?

Introduction

You now know how to take spectra using the monochromator and the photomultiplier. In the previous lab you took spectra fairly quickly because accuracy was not paramount. In this lab the object is to identify some unknown lines by measuring their wavelengths accurately. That means scanning slowly.

Spectra

You have two neon lamps. From each them you need two spectra

- A moderately fine scan from 580 nm to 700 nm. That should give you enough neon lines to identify, and to tell you the wavelength of the lines in the narrow, slow scan.
- A slow scan over a narrow range of wavelengths, from 582 nm to 595 nm. For this you should take as many data points as possible. Set the data rate to 10 points per second. Since you cannot go over 10,000 points that tells you how long the scan can be, and therefore the scan rate for the monochromator (a scan of 13 nm in the same time).
- A second slow scan, this time over a narrow range of wavelengths, from 667 nm to 672 nm.

Analysis

1. Are there any lines in one spectrum that are not in the other?
2. Use the narrow, slow scan to find their wavelengths as accurately as you can.
3. From where do you think they might come? (Hint it is worthwhile looking closely at the labels on the lamps.)