Balmer Series Data Acquisition Software

Version 1.0, 1/14/2013 Matt Klint

Please read and understand this manual before using the Balmer.exe software.

Overview

This program (LabVIEW executable) will take the data you need in order to complete this experiment. In addition to plotting the data in real time, this program will also write said data to a .txt file you specify so you can perform your own analysis.

Hardware

The program uses an 8 bit rotary encoder (wikipedia.org/wiki/Rotary_encoder) to track the position of the monochromator as it scans your desired wavelength range. At the same time, voltage data is polled from the lock in amplifier at ½ second intervals. The resulting on screen plot is the combination of these data, voltage as a function of wavelength.

Running the software

Open the Balmer.exe shortcut on the desktop. You will be prompted to specify a .txt file to write your data to. Enter a new file or select an existing one and press OK.

Enter the starting wavelength of your scan and press Set.

Turn on the monochromator motor. Data will not be written to your text file until the encoder value begins to increase.

Important: Scan only in the direction of increasing wavelength, labeled "longer " on the monochromator.

Turn on/off the voltage range auto scale using the toggle switch. Or if you prefer to set it manually, turn off auto scale and use the slider to the left of the voltage axis

When you've reached your desired stop wavelength, press the *Stop* button to finish writing data to your text file.

If running more than one scan of the same range, make sure to start on the same encoder value, this will reduce some of the error in your measurement as the encoder is much more accurate than the monochromator dial at .039 Angstroms per bit.