

Lab 6: Grating Spectrometer  
Laboratory Report  
Fundamentals of Imaging Science  
Professor Vodacek

Alex Jacob

## **Introduction**

For this lab, we observe and calibrate the wavelength axis of spectra of different light sources. This is done to understand how different sources that appear to be the same color have different spectra.

## **Methods**

First, Fiji, an image analysis program, was used to open the four images and create plot profiles for each image. Then a rectangle of approximately equal measurements was placed on each of the times. The left edge of the rectangle was placed on the center slit, and the right side was put to the right of the colored light. The plot was then saved as an Excel file. There were two columns within the Excel files: the first being the position and the second being the point's gray value. The necessary values only begin appearing once the darkness around the slit is passed. The slit values to where the colors started to appear were parsed from the data; the remaining are the important values. From there, the maximum value was attained, and every gray value was divided by it. This means that the greatest value is equal to 1, and the rest are  $0 < x < 1$ . Everything before this is considered "normalizing" the data.

After normalizing the data, the wavelength calibration can begin. The x values for the green and red dots were used alongside their wavelength values. Then respective y values were assigned using the formula.

## **Results**

## **Discussion**