Finding the Finer Things With Fabry-Pérot

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Background

In many optical and solid-state experiments, it is necessary to analyze the spectrum of a light source in the lab. However, typical spectrometers used do not have high enough spectral resolutions for many modern, high-precision optical experiments

Fabry-Pérot Interferometers (FPI) are optical instruments which can discern light sources less than 1 nm apart, and selectively pick out very narrow color bands at a time which makes FPI a great candidate for high resolution, finely tunable spectrometers

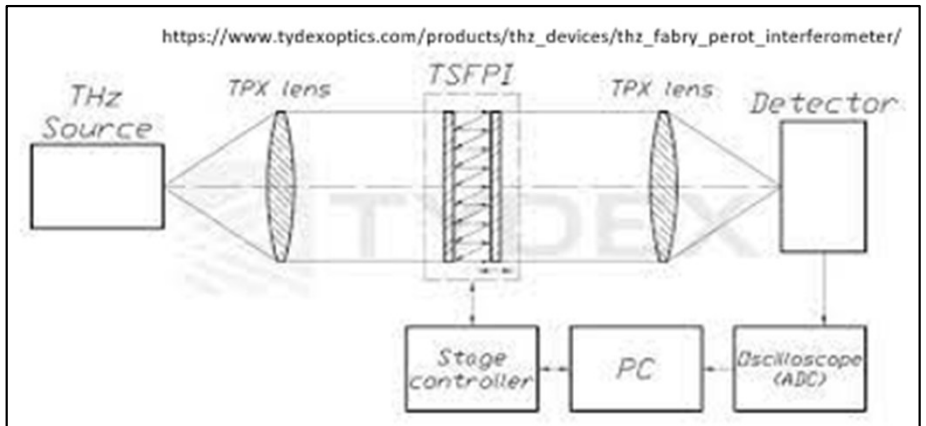

Figure 1: Diagram of Workings of Fabry-Pérot Interferometer

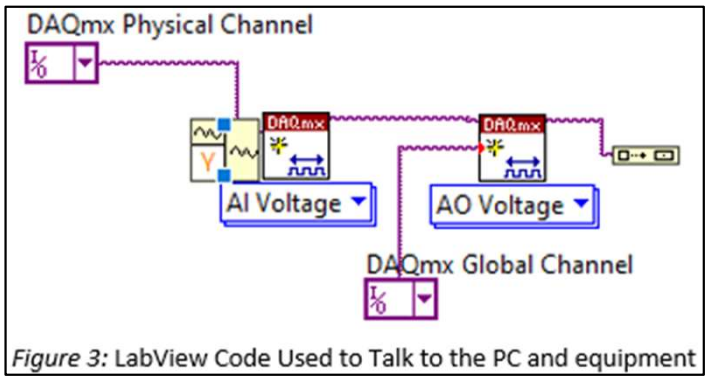

Figure 3: LabView Code Used to Talk to the PC and equipment

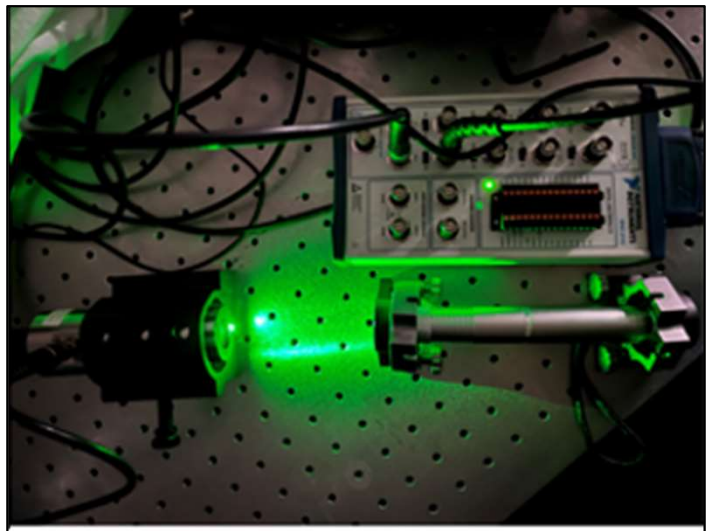

Figure 2: Experimental Setup; FPI receives light source and sends data to the PC to be processed

Project Setup and Goals

Using a commercially available FPI, along with a software called LabView, the project goal is to write a program that produces the desired high-resolution spectrum of an FPI.

The LabView program talks to a high voltage source, which controls the wavelength being detected, and it reads data in from the FPI. Lastly, this data will be used to plot the spectrum of the light source.

Progress and Next Steps

At this point, I can communicate with the PC and all the experimental equipment using LabView, but I have not yet been able to produce a proper spectrum. The next steps in the project are to troubleshoot my setup by testing the equipment I am using and ensuring that my programs are configured properly to show the correct results.