Lab 2 Outline

William Kemp 13136130
James Park 36217131

Overall Goal:

Lab Session 1: Getting familiar with the equipments and Understand the purpose

- **Alignment (time consuming)**
  - Align the spatial filter. The purpose of the spatial filter is to filter the input of the Gaussian beam and produces a focused beam.
  - Assemble an imaging system
  - Determine the best object to use to define an object and image plane combination
  - Determine the best object to use to find the Fourier transform plane
- **Mesh Filtering Experiment (time consuming)**
  - Estimate the magnification of the imaging system.
  - Take picture of the magnified image
  - Take picture of a magnified image of Fourier Transform
  - Determine the bright spots in the Fourier Transform plan
  - Investigate how moving the mesh and changing its orientation affect the magnified image and the Fourier transform.

Lab Session 2: Having ourselves familized with the equipments and understood the theory better, we work through the lab

- **Continue with Mesh Filtering Experiment if not completed**
- **Character Recognition**
  - Get the fourier transform of NOZON aperture and examine spatial frequencies pattern.
  - Attempt to filter out all the letters except the N's
- **Dark Image Field**
  - Pick an aperture to produce a dark image
- **Phase-Contrast**
  - Using the grating aperture in the object plane, determine how to modify the phase of the DC component
  - Record an image of phase grating

Lab Session 3: Finish the lab and recollect data if needed

- **Continue with Phase-Contrast if not completed**
- **Diffraction**
  - Capture the diffraction image for five slit widths.
  - Plot a graph of diffraction intensity vs position
- **Recollect Data if needed**