

## Outline Session 3

William Kemp

James Park

The focus of this session will be to conduct the portion of the lab concerned with observing Fraunhofer and Fresnel Diffraction effects. If we have time at the end we'll attempt to replicate the mesh experiment in order to confirm the magnification factor determined through the diffraction pattern.

### Setup: (quick)

- Align the spatial filter using methods outlined in session 1 lab book
- Place a collimating lens right after the spatial filter (columnated beam)
- Place the adjustable slit after the collimating lens
- Observe the light with the white panel

### Diffraction: (slow)

- Using a very narrow slit, check that the diffraction pattern is something we would expect
- Increase the slit width and observe what happens to the diffraction pattern
- Setup the CCD camera to be approximately normal to the white panel with the patterns on it
- Adjust the CCD settings such that the images being taken will not be saturated
- Select 5 different slit widths to measure the diffraction patterns for: this will depend on the distance to the white board
- Process the photos for noise reduction by averaging intensities
- Check that the theoretical models and experimental data agree