

# Lab 2 Quality of a Point Image

# Overview

In this and the next lab we will look at astigmatism and coma produced by the same optical configuration and both in the image plane and the exit pupil

The purpose is to show the relationship between wavefront errors, and their effect on the size and shape of the image

The two set up will produce largely pure astigmatism or pure coma  
Look at both through focus and at small and large amounts

# Looking at the Image

- Use an autostigmatic microscope as a source and detector
- For astigmatism and coma, go through focus and store pictures of both for positions either side of focus
- How do these aberrations change thru focus?
- If time, capture file with Matlab and make a 3-D plot of the image. Compare with Zemax plot.

# Astigmatism

- Set up for astigmatism will be using a concave spherical mirror in the field
- Image is reflected back to object using a convex mirror
- Amount of astigmatism changed by going farther into the field

# Coma

- Coma is made by shearing matched positive and negative lenses
- Again, light is reflected back with a convex ball
- Amount of coma is governed by shear distance