**Distortion Solution:**

The distortion solution for the MOSFIRE optics was found by putting a grid of points, covering a wide range of wavelengths, through the Zemax optical prescription. Using the Scipy package in Python, a fifth order B-spline was fit to the processed grid for each wavelength. These distortion maps are used along with the PyRAF drizzle task to rectify a distorted raw image. In most cases the distortion is less than two pixels and will only have a large effect when seeing is exceptional. It is the goal of this rectification process to establish a procedure for these good seeing opportunities.

The distortion maps for the central wavelength of Y, J, H, and K are shown in the figure below. The top row shows the horizontal offset of light rays at the detector relative to the field location. The bottom row shows the vertical offset.

| Y | J | H | K |
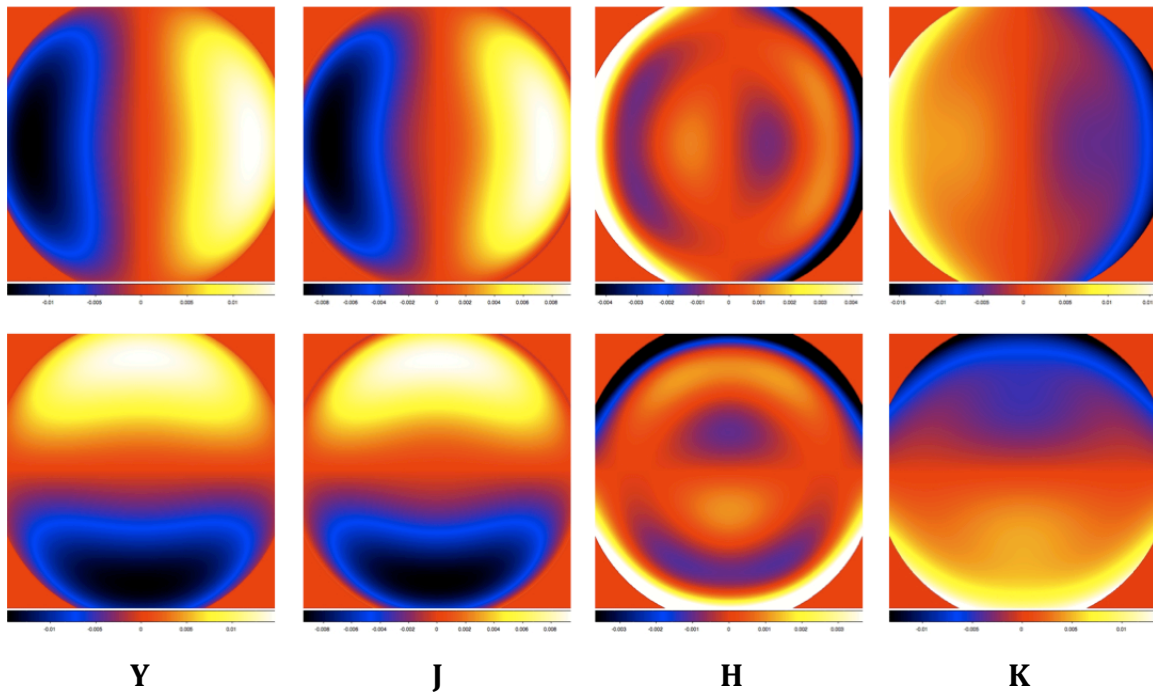
The maximum shift in pixels for each central wavelength is ~0.82 for Y, ~0.52 for J, ~0.57 for H, and ~0.91 for K. The shift for each band is ~2.0 pixels, or ~0.36 arcseconds.

I will be able to use the data acquired during cooldown #5 to reproduce the distortion maps above. This will serve as another method of comparing the as-built optics to the designed prescription.