



The wavefront sensor (WFS) has been widely used as the key component of adaptive optics system in optical system (e.g. Ground-based telescopes) to detect the wavefront disturbance. Sensors like Shack-Hartman WFS, Curvature WFS and Zernike modal WFS acquire the local derivatives, curvatures or the modal signal of the wavefront. These sensors differ in dynamic range and sensitivity.

The aim of this work is to combine two or more sensor principles into one scheme using a compact hologram design. Previous work has demonstrated the possibility of incorporating Shack-Hartmann WFS into Zernike modal WFS. We plan to further combine the curvature with Shack-Hartmann WFS or Zernike modal WFS to obtain high sensitivity for sensing both low and high spatial frequencies.

Possible tasks (depends on personal interests):

- Implementation of the sensor principles
- Sensor calibration and parameters optimization
- Hologram design and optimization
- Programming
- Optical setup construction and optimization