



Schematic diagram of sensor principle

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. The Shack-Hartmann sensor is the state-of-the-art wavefront sensor, which detects the local wavefront slopes by tracing the focus spots. The sensor accuracy is mainly determined by the accuracy of measuring the centroid of the spots generated by the micro-lens array.

The aim of this work is to use hologram array to generate individual diffraction patterns for each sub-aperture. The wavefront slopes in each aperture are then measured by the displacement of the corresponding diffraction pattern using image correlation, improving the sensor accuracy.

Possible tasks (depends on personal interests):

- Hologram design and optimization
- Sensor calibration
- Image processing
- Programming
- Optical setup construction and optimization