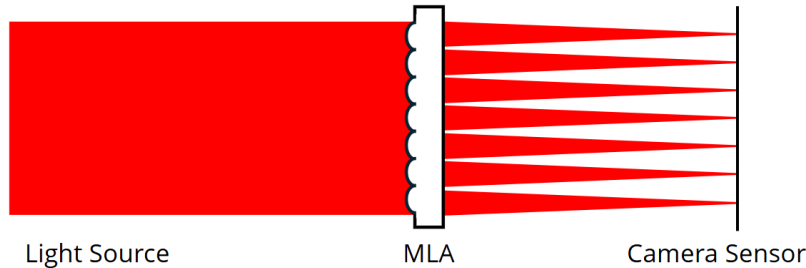


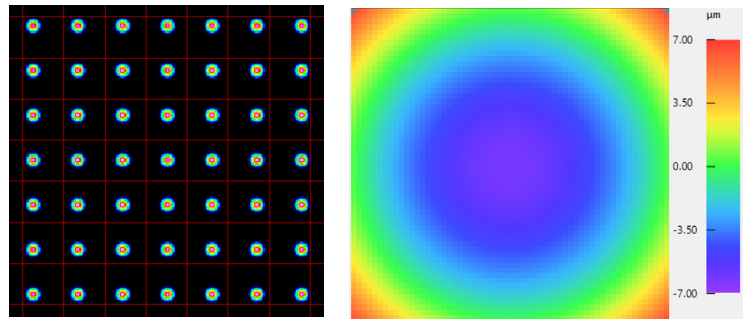
Wavefront Sensing At A Glance

Accurate wavefront sensing is critical for many industries. From lens and semiconductor wafer inspection to AR/VR and astronomy, wavefront sensors are invaluable for analyzing and characterizing wavefronts.

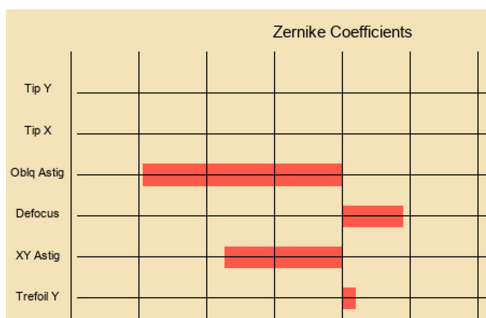


DataRay offers Shack-Hartmann wavefront sensors for quick and accurate wavefront reconstruction. These utilize a microlens array (MLA) precisely positioned in front of a camera sensor to generate an array of focused spots. By analyzing the individual beam waists formed by the MLA, the wavefront shape is automatically quantified, and important wavefront characteristics are calculated automatically.

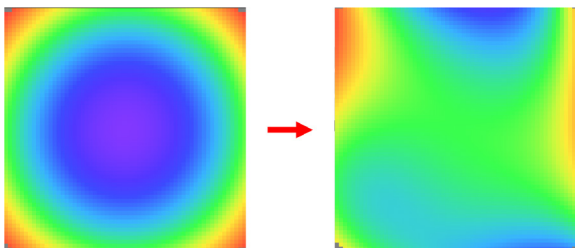
To calculate the wavefront shape, beam centroid locations are compared to the centroids from a perfectly flat wavefront. This information allows the wavefront slope to be calculated at each lenslet. The wavefront is then reconstructed from these slopes using either numerical integration or polynomial fitting techniques.



Raw camera sensor data (left) and a reconstructed wavefront (right)



Zernike wavefront reconstruction



Tilt and defocus corrections. No correction (left) and tilt and defocus subtracted (right).

When selecting a wavefront sensor, several application parameters should be considered.

- Wavelength
- Aperture Size
- Spatial Resolution
- Wavefront Sensitivity
- Wavefront Accuracy

DataRay wavefront sensors include our state-of-the-art wavefront characterization software featuring:

- Zonal Wavefront Reconstruction (Southwell Integration)
- Modal Wavefront Reconstruction (Zernike up to 10th degree, 66 terms)
- Tilt and defocus correction
- Dioptric Power Vectors
- Raw Image, Beam Profile, and Wavefront Analysis