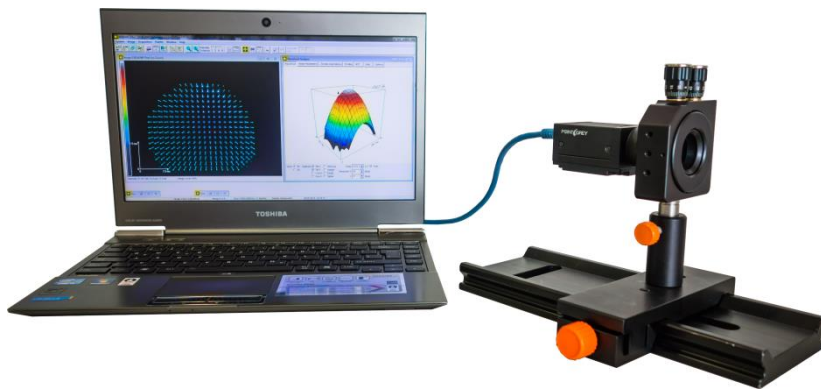
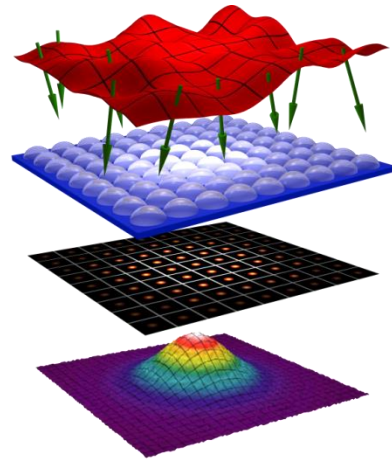


# Hartmann-Shack Wavefront Sensor

## Operation principle

The **Hartmann-Shack** wavefront sensor of LLG was designed for comprehensive laser beam and optics characterization. The system uses a micro-lens array for dividing the incoming wave into a large number of sub-rays (cf. figure right). Intensity and position of the individual foci are monitored with a camera, enabling the reconstruction of both **beam profile** and **wavefront** from a single measurement.

These data accomplish real-time evaluation of beam propagation parameters (beam width, divergence,  $M^2$ ) which is especially important for pulsed or fluctuating sources.



- ▶ Beam characterization
- ▶ Optics testing (NIR ... EUV)
- ▶ Adaptive optics
- ▶ ISO beam parameters
- ▶  $M^2$  in real-time
- ▶ Zernike analysis
- ▶ Beam propagation

## Features

- ▶ All parameters from single measurement
- ▶ Wide spectral range: 1064 - 1 nm
- ▶ Dynamic range: up to  $100 \lambda$  (@633 nm)
- ▶ Sensitivity (optics testing):  $< 100 \mu\text{m}$
- ▶ Various micro-lenses and sensor (10 bit - 14 bit)
- ▶ USB 3.0 camera (ideal for laptop)
- ▶ Customized solutions

