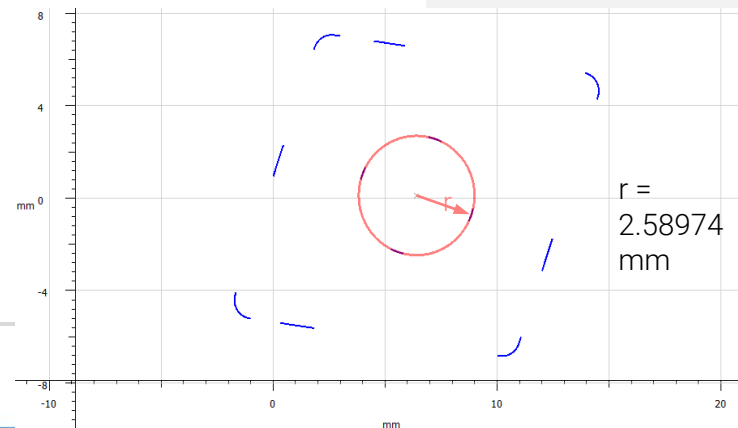
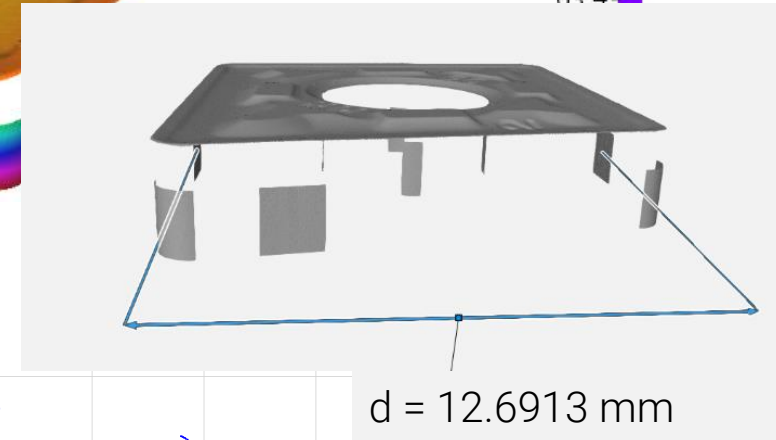
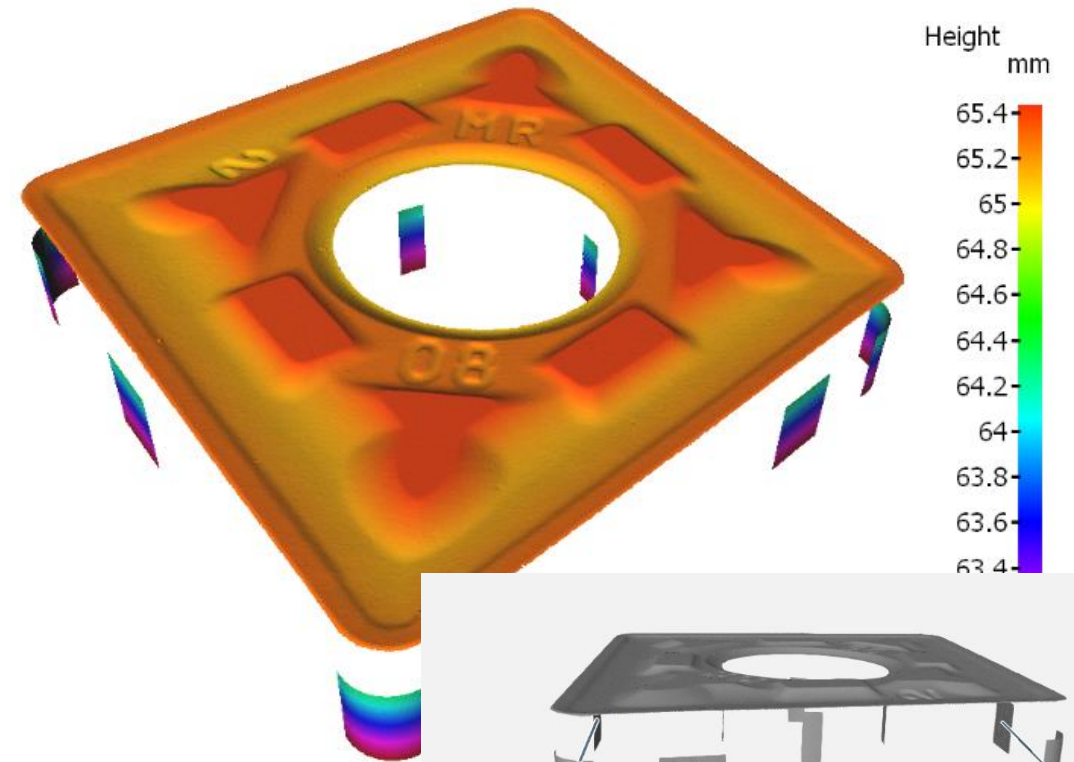


Vertical Focus Probing

Measurement of vertical surfaces with more than 90°.

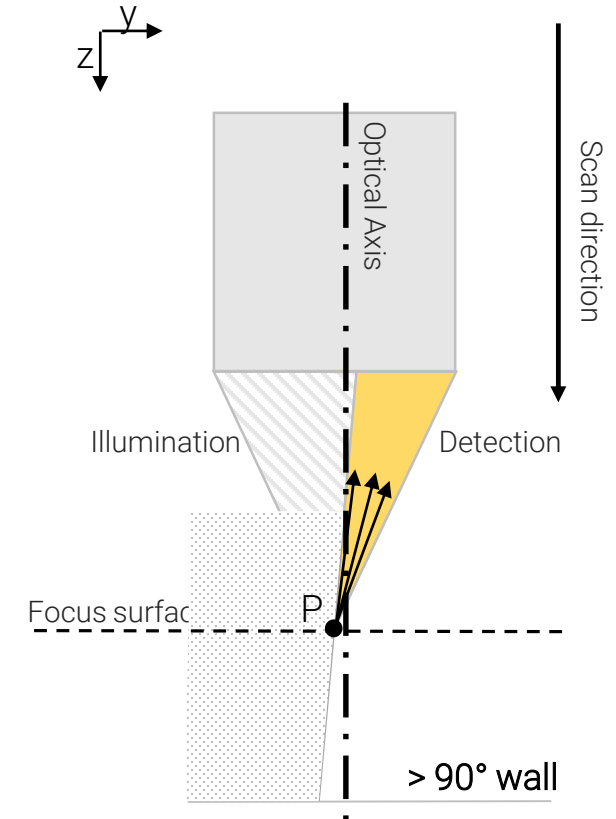
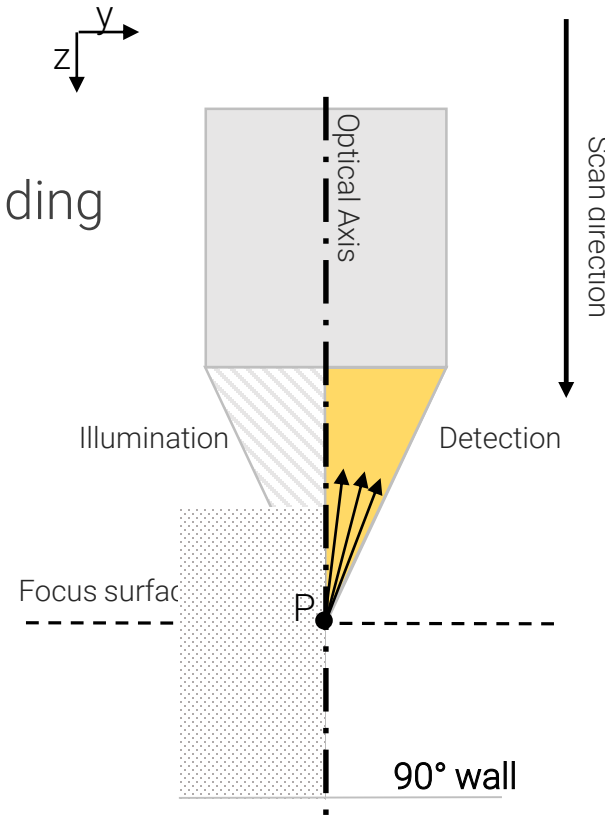
Vertical Focus Probing

- » Extension of Focus Variation
 - » Optical measurement principle
- » Allows the measurement of slope angle $> 90^\circ$
- » Focus-Variation is not restricted to illumination system
- » Applications:
 - » Lateral probing
 - » Measurement of Vertical walls & holes
 - » Measurement of complex geometries
 - » GD&T measurements



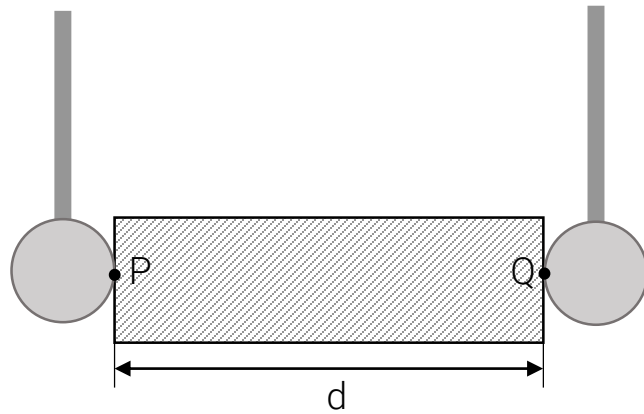
The measurement principle

- » Uses reflective properties of surface
- » Always a part of light is reflected, depending on
 - » Type and position of illumination
 - » Geometry of the surface
 - » Roughness properties of surface
- » Orientation of optical axis parallel to measured surface

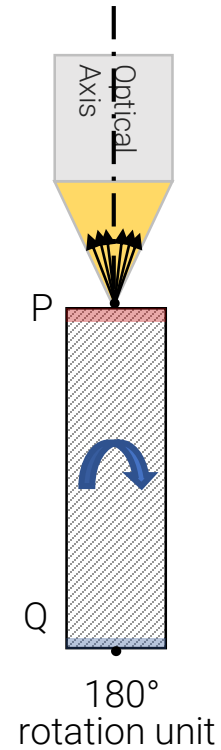


Lateral probing

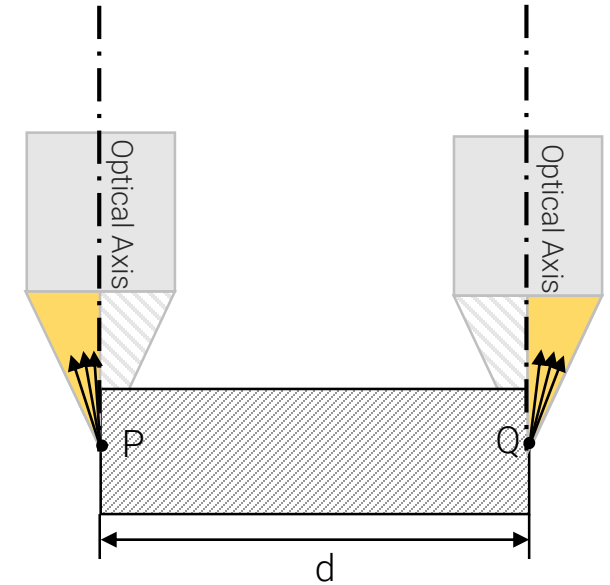
- » Measurement with lateral probing was reserved for tactile measuring instruments.
- » Objective: Measurement of lateral distances with lateral probing



tactile



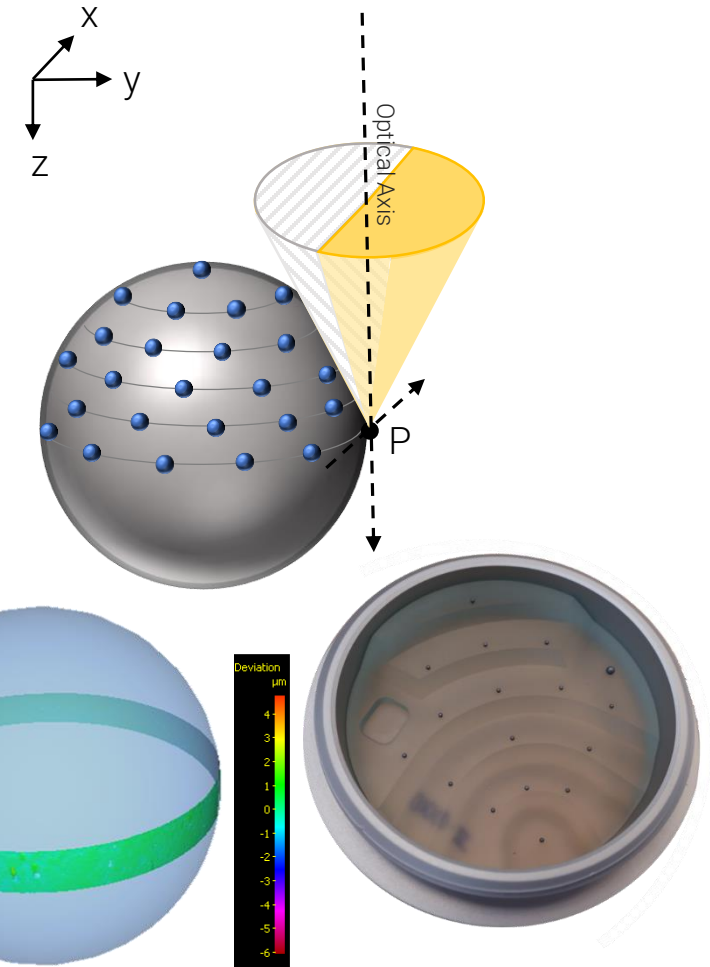
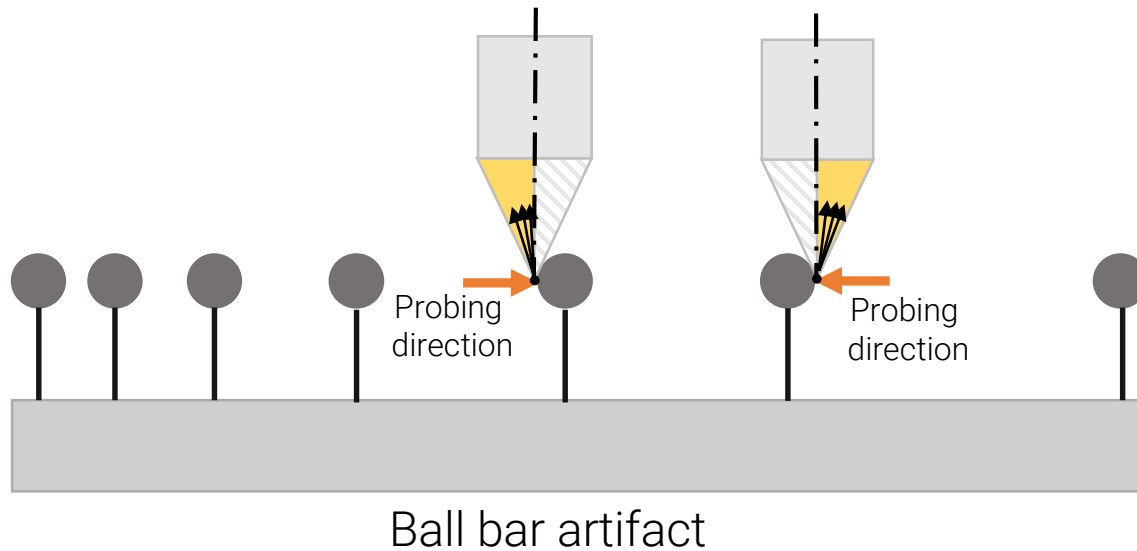
optical



optical **VFP**

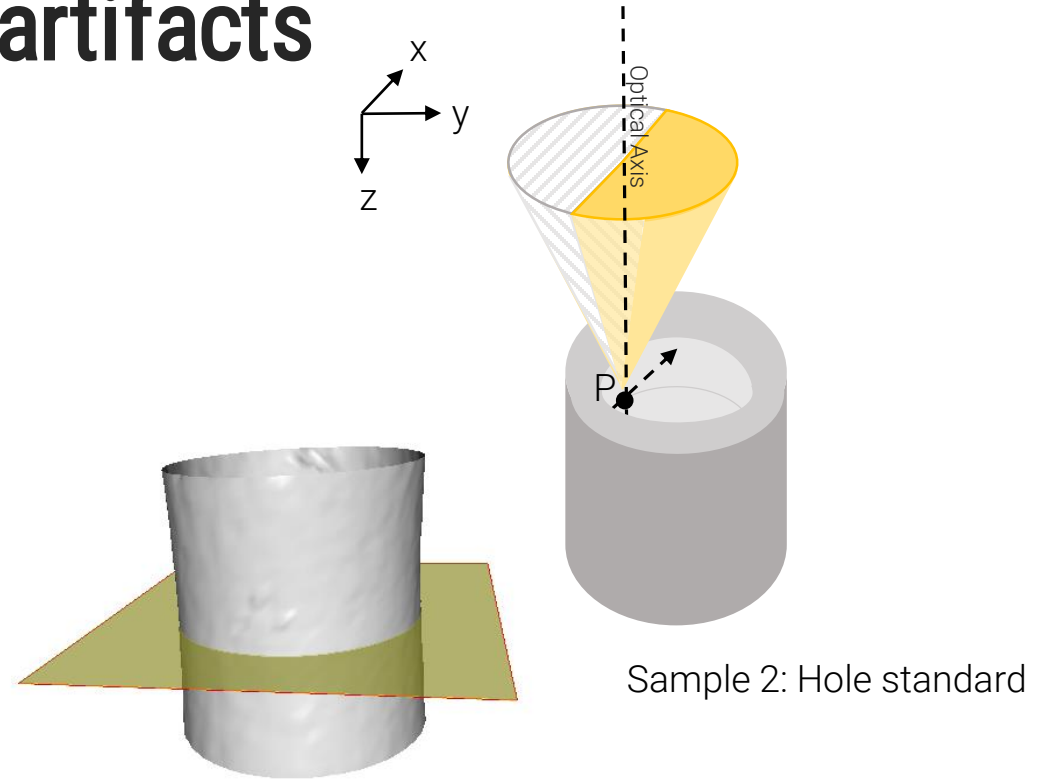
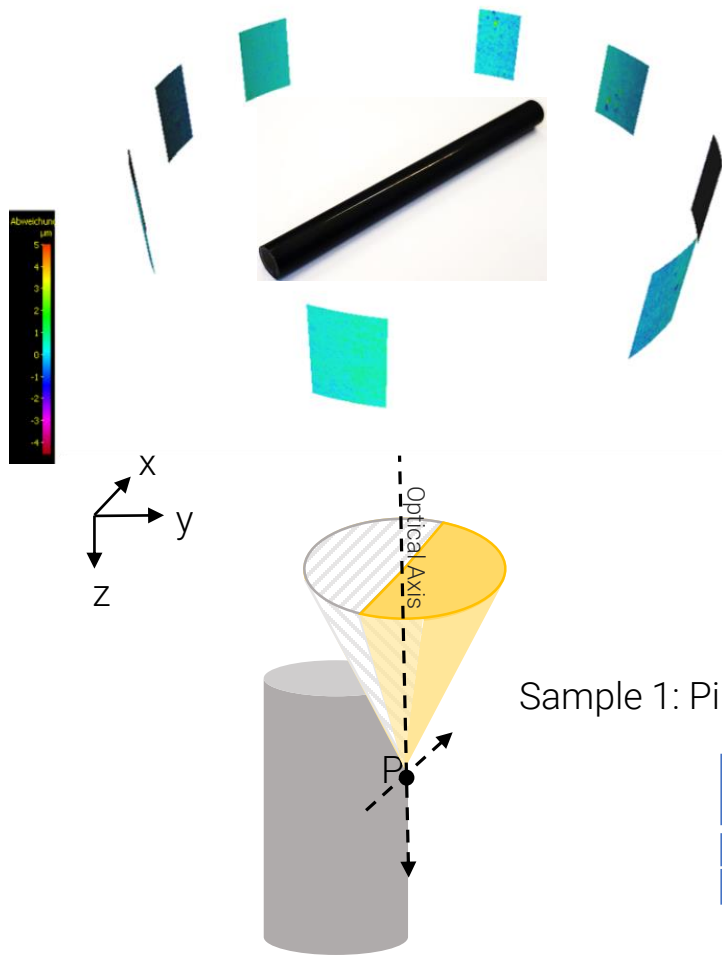
Lateral Probing on a calibrated sphere

- » ISO 10360-8
 - » E_{Bj} , P_{Size} , P_{Form}
 - » bidirectional measurements
 - » 5 lengths, 7 positions, 3 times



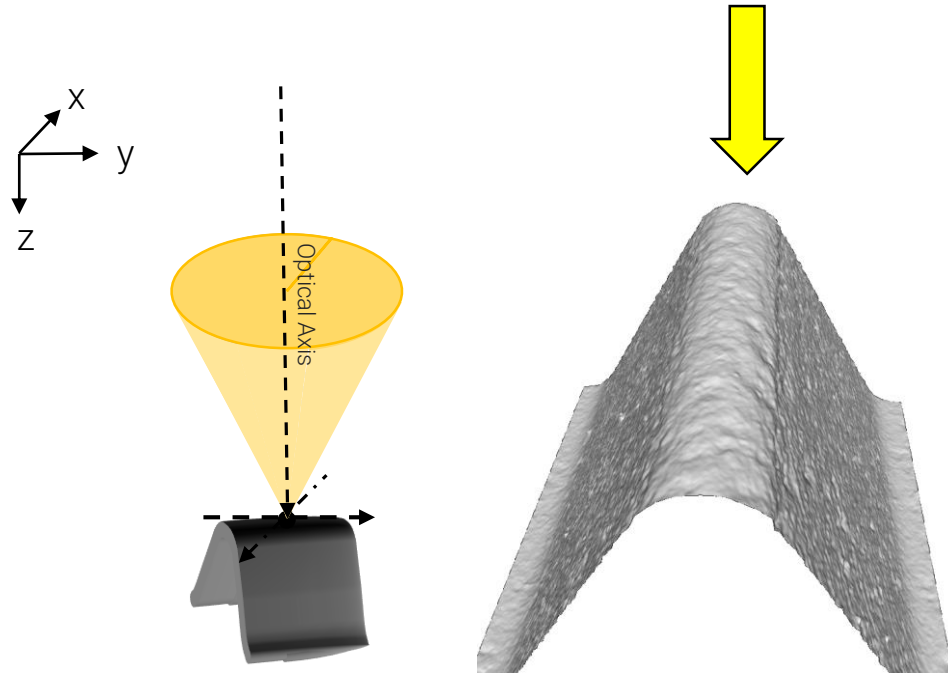
Artefact	Calibrated Value [mm]	Measured Value [mm]	Deviation [mm]
Sphere	0.99972 ± 0.00020	0.99916	0.00056

Lateral Probing on calibrated artifacts

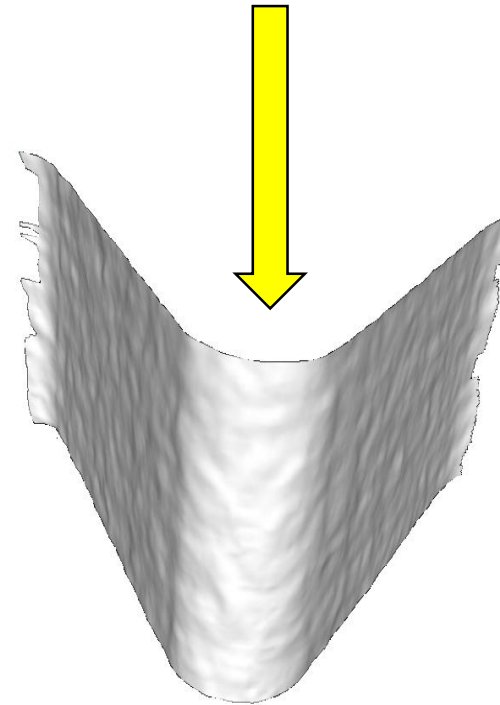


Artefact	Calibrated Value [mm]	Measured Value [mm]	Deviation [mm]
Pin	6.00033 ± 0.00050	6.00092	0.00059
Hole	0.20065 ± 0.00013	0.200568	0.000082

Example: Verification Tool



Standard Focus-Variation



Vertical Focus Probing



Comparison of Focus-Variation and Vertical Focus Probing

