

Master 2011

Berker Hüsam

Lens characterization by phase-shifting interferometry.

ABSTRACT - Masterthesis

Optical elements (i.e. lenses, mirrors, gratings) importance rising tremendously in the fields of manufacturing, metrology, communications and astronomy. However, before their usage, their characteristics must be known with high precision. In this thesis, the aim is to characterize lenses via one of the eminent method, called Phase-shifting Interferometry (PSI). Their theoretical investigation will be handled conclusively and thereby, their ability limitations (dynamic range) found. Cures to upgrade the measurement will be discussed through the text and also one new unwrapping method, called Pixelwise Frequency Integration (PFI) is proposed, which decreases the computation time while retrieving the phase-map.