Dual Phase Shifting Holographic Interferometry: An Overview

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Abstract: Phase measurement has been a topic of increasingly important interest to researchers active in optical metrology to an extent that substantial advances in the area have been reported over the past three decades. However, these developments have been largely unsuccessful in addressing the recurrent need to extract multiple displacement information transmitted through the phase. One particular advance that has opened new avenues in metrology is the use of estimation techniques to measure multiple phases, simultaneously. This approach has for the first time shown the capability of simultaneously measuring dual phase steps imparted to the two piezoelectric devices integrated in the configurations involving four-beam interferometry. This has primarily lead to research focused on understanding and implementing processes needed for supporting information embedded in such interferometers. This talk presents an overview of estimation techniques based on spectral decomposition with emphasis on describing the performance of each approach.