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Measuring material thickness changes through tri-aperture digital speckle pattern interferometry

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Abstract

A configuration for the measurement of thickness changes in materials through one-shot digital speckle pattern interferometry (DSPI) was developed. The phase maps calculation was made by adding carrier fringes by the multiple aperture principle and Fourier Transform Method (FTM). With this setup, interferometry configurations verified that the simultaneous and instantaneous visualization of two opposite faces of a surface is possible. In addition, the combination of the simultaneous results obtained from both sides of the material makes it possible to determine displacements with greater