

Dynamic Out-of-Plane Measurements Using a Speckle Interferometer with a Polarization Camera

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We implemented a dynamic electronic speckle pattern interferometer with out-of-plane sensitivity using a pixelated polarization camera. The system is based on polarization phase shift techniques that, combined with the polarization imaging sensor, can follow temporary deformation fields caused by mechanical stress. The optical instrument have potential implementations of characterizing information such as hardness and malleability of steel samples. The implemented system captures four simultaneous patterns with comparable intensities, from which the optical phase is calculated using a frequency phase demodulation algorithm and subsequently, the out-of-plane deformation field. We present experimental results and implementation of the optical system measuring a galvanized steel plate, showing the feasibility of our proposal.

Short biography of Presenter:



David Serrano received his Phd. in optics from the Centro de Investigaciones en Optica (CIO) in Mexico in 2014. From 2014 to 2017 He was working as a postdoctoral researcher in Japan at the Center for Optica Research and Education (CORE) in Utsunomiya, Japan. Since 2017 he works as a researcher professor at Guadalajara University and his main research field involves dynamic interferometry techniques and polarization sensing instruments.