

River Publishers Series in Conference Proceedings of the Society for Experimental Mechanics Series

Advancement of Optical Methods & Digital Image Correlation in Experimental Mechanics, Vol. 2

Proceedings of the 2025 Annual Conference on Experimental and Applied Mechanics

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ISBN: 9788743808282
e-ISBN: 9788743808336
Available From: September 2025
Price: € 0.00

Description:

Advancement of Optical Methods & Digital Image Correlation in Experimental Mechanics represents one of five volumes of technical papers presented at the SEM 2025 SEM Annual Conference & Exposition on Experimental and Applied Mechanics organized by the Society for Experimental Mechanics and held in Milwaukee, WI, June 2-5, 2025. The complete Proceedings also includes volumes on: Dynamic Behavior of Materials; Mechanics of Biological Systems and Materials and the Mechanics of Composite, Hybrid & Multifunctional Materials; Fracture, Fatigue, Failure, Damage Evolution and Thermomechanics & Infrared Imaging; and Mechanics of Additive & Advanced Manufacturing, Inverse Methods and Machine Learning.

Each collection presents early findings from experimental and computational investigations on an important area within Experimental Mechanics, Optical Methods & Digital Image Correlation (DIC) being important areas.

With the advancement in imaging instrumentation, lighting resources, computational power, metrology and data storage, optical methods have gained wide application throughout the experimental mechanics community during the past decades. These methods have been applied for measurements over a wide range of spatial domains and temporal resolution. Optical methods have used a full range of wavelengths from X-Ray to visible lights and infrared. They have been developed not only to make two-dimensional and three-dimensional deformation measurements on surfaces, but also to make volumetric measurements throughout the interior of a material body.

The areas of Digital Image Correlation (DIC) and Digital Volume Correlation (DVC) have been an integral track within the SEM Annual Conference, spearheaded by Professor Michael Sutton from the University of South Carolina. The contributed papers within this section of the volume span technical aspects of DIC and DVC.

In addition, papers were contributed to celebrate Prof. Fu-Pen Chiang's retirement from Stonybrook University. The conference organizers thank the authors, presenters, and session chairs for their participation, support, and contribution to this very exciting area of experimental mechanics.

Keywords: Photoelasticity, DIC, CWR Buckling, RNT, Instability