



High Sensitivity Moiré

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Book Condition: New. Publisher/Verlag: Springer, Berlin | Experimental Analysis for Mechanics and Materials | This book describes both the theory and practice of physical measurements that use high-sensitivity moiré - principally moiré interferometry. Its focus is on the mechanics and micromechanics of materials and structural elements. Unlike both classical and holographic interferometry, which are best suited for out-of-plane deformation measurements, moiré interferometry provides whole-field maps of the in-plane displacements. Normal strains and shear strains are derived directly from the in-plane data. Moiré with 2400 lines per mm is typical in practice, yielding a sensitivity of 2.4 moiré fringes per micron of displacement. For micromechanics, sensitivity corresponding to 17 nm per fringe contour is demonstrated. Part II is devoted to applications of moiré interferometry and microscopic moiré interferometry. New studies, not previously published, are included. Diverse fields are addressed: advanced composite materials, thermal stresses, electronic packaging, fracture, metallurgy, time-dependence, strain gage calibration. The methods can be applied for whole-field measurements on nearly and solid body. This reader-friendly book should serve engineers and scientists who are concerned with measurements of real phenomena - and it should stimulate students to pursue the treasures of experimental analysis. | 1 Introduction.- 1.1 Our Subject.- 1.2 Scope...



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