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Autore	Freddi Alessandro
Titolo	Experimental Stress Analysis for Materials and Structures : Stress Analysis Models for Developing Design Methodologies / / by Alessandro Freddi, Giorgio Olmi, Luca Cristofolini
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ISBN	3-319-06086-4
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Descrizione fisica	1 online resource (509 p.)
Collana	Springer Series in Solid and Structural Mechanics, , 2195-3511 ; ; 4
Disciplina	620.112
Soggetti	Mechanics Mechanics, Applied Materials science Machinery Physical measurements Measurement Biomedical engineering Solid Mechanics Characterization and Evaluation of Materials Machinery and Machine Elements Measurement Science and Instrumentation Biomedical Engineering and Bioengineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction to Inverse Problems -- Introduction to the Application of Strain Gages -- Introduction to Photoelasticity -- Introduction to Holographic Interferometry -- Overview of Digital Image Correlation -- Static Stress Models -- Local Stress Models for Variable Loads -- Local Strain Models for Variable Loads -- Elementary Models for Stress Singularities -- Stress Models in Biomechanics -- Reliability Models Based on Experiments.
Sommario/riassunto	This book summarizes the main methods of experimental stress

analysis and examines their application to various states of stress of major technical interest, highlighting aspects not always covered in the classic literature. It is explained how experimental stress analysis assists in the verification and completion of analytical and numerical models, the development of phenomenological theories, the measurement and control of system parameters under operating conditions, and identification of causes of failure or malfunction. Cases addressed include measurement of the state of stress in models, measurement of actual loads on structures, verification of stress states in circumstances of complex numerical modeling, assessment of stress-related material damage, and reliability analysis of artifacts (e.g. prostheses) that interact with biological systems. The book will serve graduate students and professionals as a valuable tool for finding solutions when analytical solutions do not exist.