Fourier Modal Method And Its Applications In Computational Nanophotonics

This book addresses some of the issues in visual optics with a functional analysis of ocular aberrations, especially for the purpose of vision correction. The basis is the analytical representation of ocular aberrations with a set of orthonormal polynomials, such as Zernike polynomials or the Fourier series. Although the aim of this book is the application of wavefront optics to laser vision correction, most of the theories discussed are equally applicable to other methods of vision correction, such as contact lenses and intraocular lenses.

This book covers structural dynamics from a theoretical and algorithmic approach. It covers systems with both single and multiple degrees-of-freedom. Numerous case studies are given to provide the reader with a deeper insight into the practicalities of the area, and the solutions to these case studies are given in terms of real-time and frequency in both geometric and modal spaces. Emphasis is also given to the subject of seismic loading. The text is based on many lectures on the subject of structural dynamics given at numerous institutions and thus will be an accessible and practical aid to students of the subject. Key features: Examines the effects of loads, impacts, and seismic forces on the materials used in the construction of buildings, bridges, tunnels, and more Structural dynamics is a critical aspect of the design of all engineered/designed structures and objects - allowing for accurate prediction of their ability to withstand service loading, and for knowledge of failure-causeing or critical loads

Based on more than 30 years of research on differential theories of gratings, this book describes developments in differential theory for applications in spectroscopy, acoustics, X-ray instrumentation, optical communication, information processing, photolithography, high-power lasers, high-precision engineering, and astronomy. Introducing the Fast Fourier Factorization approach to improve the convergence of a truncated series, the book examines multilayers, stacked gratings, crossed gratings, photonic crystals, and isotropic and anisotropic materials; techniques and examples in grating design; and Maxwell equations in a truncated Fourier space.

This book demonstrates the concept of Fourier ptychography, a new imaging technique that bypasses the resolution limit of the employed optics. In particular, it transforms the general challenge of high-throughput, high-resolution imaging from one that is coupled to the physical limitations of the optics to one that is solvable through computation. Demonstrated in a tutorial form and providing many MATLAB® simulation examples for the reader, it also discusses the experimental implementation and recent developments of Fourier ptychography. This book will be of interest to researchers and engineers learning simulation techniques for Fourier optics and the Fourier ptychography concept.

The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

When I was a student, in the early fifties, the properties of gratings were generally explained according to the scalar theory of optics. The grating formula (which pre dicts the diffraction angles for a given angle of incidence) was established, exper imentally verified, and intensively used as a source for textbook problems. Indeed those grating properties, we can call optical properties, were taught'in a satisfac tory manner and the students were able to clearly understand the diffraction and dispersion of light by gratings. On the other hand, little was said about the "energy properties", i. e. , about the prediction of efficiencies. Of course, the existence of the blaze effect was pointed out, but very frequently nothing else was taught about the efficiency curves. At most a good student had to know that, for an eche lette grating, the efficiency in a given order can approach unity insofar as the diffracted wave vector can be deduced from the incident one by a specular reflexion on the large facet. Actually this rule of thumb was generally sufficient to make good use of the optical gratings available about thirty years ago. Thanks to the spectacular improvements in grating manufacture after the end of the second world war, it became possible to obtain very good gratings with more and more lines per mm. Nowadays, in gratings used in the visible region, a spacing small er than half a micron is common.

Most available books on computational electrodynamics are focused on FDTD, FEM, or other specific technique developed in microwave engineering. In contrast, Fourier Modal Method and Its Applications in Computational Nanophotonics is a complete guide to the principles and detailed mathematics of the up-to-date Fourier modal method of optical analysis. It takes readers through the implementation of MATLAB(R) codes for practical modeling of well-known and promising nanophotonic structures. The authors also address the limitations of the Fourier modal method. Features Provides a comprehensive guid.

Fourier Modal Method and Its Applications in Computational NanophotonicsCRC Press

This text presents the key findings of the International Symposium held in Delft in 2003, which explored the process of shallow flows. Shallow flows are found in lowland rivers, lakes, estuaries, bays, coastal areas and in density-stratified atmospheres, and may be observed in puddles, as in oceans. They impact on the life and work of a wide variety of readers, who are here provided with a clear overview of the subject. Shallow flows are intrinsically turbulent. On one hand, there are strongly three-dimensional, small-scale turbulent motions and on the other hand, large-scale quasi-two-dimensional turbulence. This book explains and examines these differences and their effects with sections on transport processes in shallow flows; shallow jets, wakes and mixing layers; stratified and rotating flows in ocean and atmosphere; river and channel flows; and numerical modelling and turbulence closure techniques. The reader is provided with the pick of current studies and a fresh approach to the subject, with expert examination of a fascinating and crucial phenomenon of our world's water systems.

This book presents current theories of diffraction, imaging, and related topics based on Fourier analysis and synthesis techniques, which are essential for understanding, analyzing, and synthesizing modern imaging, optical communications and networking, as well as micro/nano systems. Applications covered include tomography; magnetic resonance imaging; synthetic aperture radar (SAR) and interferometric SAR; optical communications and networking devices; computer-generated holograms and analog holograms; and wireless systems using EM waves.

Stressing the importance of nanotechnology in forthcoming technology, this analysis illustrates how the field bears great promise in forming the basis of future generations of electronic and optoelectronic devices. Discussing electrons and photons in and through nanostructures by the first-principles quantum mechanical theories and fundamental concepts behind nano-electronics and optoelectronics, the material basis, physical phenomena, device physics, designs, and applications, this crucial perspective combines a variety of expert viewpoints designed to foster further research?and to suggest the cross-disciplinary interaction required in surmounting the barriers facing future generations of technology design.

The Wave Concept Iterative Procedure (WCIP) method has found an increasing number of users within electromagnetic theory and applications to planar circuits, antennas and diffraction problems. This book introduces in detail this new formulation of integral methods, based on the use of a wave concept with two bounded operators, and applications in a variety of domains in electromagnetics. This approach presents a number of benefits over other integral methods, including overcoming the problem of singularity, and reduced computing time. Through the presentation of mathematical equations to characterize studied structures and explanation of the curves obtained, via validated examples, the authors provide a thorough background to electromagnetism as well as a professional reference to students and researchers.

The importance of partial differential equations (PDEs) in modeling phenomena in engineering as well as in the physical, natural, and social sciences is well known by students and practitioners in these fields. Striking a balance between theory and applications, Fourier Series and Numerical Methods for Partial Differential Equations presents an introduction to the analytical and numerical methods that are essential for working with partial differential equations. Combining methodologies from calculus, introductory linear algebra, and ordinary differential equations (ODEs), the book strengthens and extends readers' knowledge of the power of linear spaces and linear transformations for purposes of understanding and solving a wide range of PDEs. The book begins with an introduction to the general terminology and topics related to PDEs, including the notion of initial and boundary value problems and also various solution techniques. Subsequent chapters explore: The solution process for Sturm-Liouville boundary value ODE problems and a Fourier series representation of the solution of initial boundary value problems in PDEs The concept of completeness, which introduces readers to Hilbert spaces The application of Laplace transforms and Duhamel's theorem to solve time-dependent boundary conditions The finite element method, using finite dimensional subspaces The finite analytic method with applications of the Fourier series methodology to linear version of non-linear PDEs Throughout the book, the author incorporates his own class-tested material, ensuring an accessible and easy-to-follow presentation that helps readers connect presented objectives with relevant applications to their own work. Maple is used throughout to solve many exercises, and a related Web site features Maple worksheets for readers to use when working with the book's one- and multi-dimensional problems. Fourier Series and Numerical Methods for Partial Differential Equations is an ideal book for courses on applied mathematics and partial differential equations at the upper-undergraduate and graduate levels. It is also a reliable resource for researchers and practitioners in the fields of mathematics, science, and engineering who work with mathematical modeling of physical phenomena, including diffusion and wave aspects.

Praise for the First Edition ". . . fills a considerable gap in the numerical analysisliterature by providing a self-contained treatment . . . this is animportant work written in a clear style . . . warmly recommended toany graduate student or researcher in the field of the numericalsolution of partial differential equations." —SIAM Review Time-Dependent Problems and Difference Methods, SecondEdition continues to provide guidance for the analysis ofdifference methods for computing approximate solutions to partialdifferential equations for time-dependent problems. The book treatsdifferential equations and difference methods with a paralleldevelopment, thus achieving a more useful analysis of numericalmethods. The Second Edition presents hyperbolic equations in greatdetail as well as new coverage on second-order systems of waveequations including acoustic waves, elastic waves, and Einsteinequations. Compared to first-order hyperbolic systems,initial-boundary value problems for such systems contain newproperties that must be taken into account when analyzingstability. Featuring the latest material in partial differentialequations with new theorems, examples, andillustrations,Time-Dependent Problems and Difference Methods,Second Edition also includes: High order methods on staggered grids Extended treatment of Summation By Parts operators and theirapplication to second-order derivatives Simplified presentation of certain parts and proofs Time-Dependent Problems and Difference Methods, SecondEdition is an ideal reference for physical scientists,engineers, numerical analysts, and mathematical modelers who usenumerical experiments to test designs and to predict andinvestigate physical phenomena. The book is also excellent forgraduate-level courses in applied mathematics and scientificcomputations.

Simulation and modeling using numerical methods is one of the key instruments in any scientific work. In the field of photonics, a wide range of numerical methods are used for studying both fundamental optics and applications such as design, development, and optimization of photonic components. Modeling is key for developing improved photonic devices and reducing development time and cost. Choosing the appropriate computational method for a photonics modeling problem requires a clear understanding of the pros and cons of the available numerical methods. Numerical Methods in Photonics presents six of the most frequently used methods: FDTD, FDFD, 1+1D nonlinear propagation, modal method, Green’s function, and FEM. After an introductory chapter outlining the basics of Maxwell’s equations, the book includes self-contained chapters that focus on each of the methods. Each method is accompanied by a review of the mathematical principles in which it is based, along with sample scripts, illustrative examples of characteristic problem solving, and exercises. MATLAB® is used throughout the text. This book provides a solid basis to practice writing your own codes. The theoretical formulation is complemented by sets of exercises, which allow you to grasp the essence of the modeling tools.

The Fourier transform is one of the most fundamental tools for computing the frequency representation of signals. It plays a central role in signal processing, communications, audio and video compression, medical imaging, genomics, astronomy, as well as many other areas. Because of its widespread use, fast algorithms for computing the Fourier transform can benefit a large number of applications. The fastest algorithm for computing the Fourier transform is the Fast Fourier Transform (FFT), which runs in near-linear time making it an indispensable tool for many applications. However, today, the runtime of the FFT algorithm is no longer fast enough especially for big data problems where each dataset can be few terabytes. Hence, faster algorithms that run in sublinear time, i.e., do not even sample all the data points, have become necessary. This book addresses the above problem by developing the Sparse Fourier Transform algorithms and building practical systems that use these algorithms to solve key problems in six different applications: wireless networks; mobile systems; computer graphics; medical imaging; biochemistry; and digital circuits. This is a revised version of the thesis that won the 2016 ACM Doctoral Dissertation Award.

In continuation of the FRINGE Workshop Series this Proceeding contains all contributions presented at the 7. International Workshop on Advanced Optical Imaging and Metrology. The FRINGE Workshop Series is dedicated to the presentation, discussion and dissemination of recent results in Optical Imaging and Metrology. Topics of particular interest for the 7. Workshop are: - New methods and tools for the generation, acquisition, processing, and evaluation of data in Optical Imaging and Metrology (digital wavefront engineering, computational imaging, model-based reconstruction, compressed sensing, inverse problems solution) - Application-driven technologies in Optical Imaging and Metrology (high-resolution, adaptive, active, robust, reliable, flexible, in-line, real-time) - High-dynamic range solutions in Optical Imaging and Metrology (from macro to nano) - Hybrid technologies in Optical Imaging and Metrology (hybrid optics, sensor and data fusion, model-based solutions, multimodality) - New optical sensors, imaging and measurement systems (integrated, miniaturized, in-line, real-time, traceable, remote) Special emphasis is put on new strategies, taking into account the active combination of physical modeling, computer aided simulation and experimental data acquisition. In particular attention is directed towards new approaches for the extension of existing resolution limits that open the gates to wide-scale metrology, ranging from macro to nano, by considering dynamic changes and using advanced optical imaging and sensor systems.

In the past few years, the differential quadrature method has been applied extensively in engineering. This book, aimed primarily at practising engineers, scientists and graduate students, gives a systematic description of the mathematical fundamentals of differential quadrature and its detailed implementation in solving Helmholtz problems and problems of flow, structure and vibration. Differential quadrature provides a global approach to numerical discretization, which approximates the derivatives by a linear weighted sum of all the functional values in the whole domain. Following the analysis of function approximation and the analysis of a linear vector space, it is shown in the book that the weighting coefficients of the polynomial-based, Fourier expansion-based, and exponential-based differential quadrature methods can be computed explicitly. It is also demonstrated that the polynomial-based differential quadrature method is equivalent to the highest-order finite difference scheme. Furthermore, the relationship between differential quadrature and conventional spectral collocation is analysed. The book contains material on: - Linear Vector Space Analysis and the Approximation of a Function; - Polynomial-, Fourier Expansion- and Exponential-based Differential Quadrature; - Differential Quadrature Weighting Coefficient Matrices; - Solution of Differential Quadrature-resultant Equations; - The Solution of Incompressible Navier-Stokes and Helmholtz Equations; - Structural and Vibrational Analysis Applications; - Generalized Integral Quadrature and its Application in the Solution of Boundary Layer Equations. Three FORTRAN programs for simulation of driven cavity flow, vibration analysis of plate and Helmholtz eigenvalue problems respectively, are appended. These sample programs should give the reader a better understanding of differential quadrature and can easily be modified to solve the readers own engineering problems.

This book covers recent advances in the method used in testing, especially in the case of structural integrity that includes fatigue and fracture tests, vibrations test and surface engineering tests that are extremely crucial and widely used by engineers and industries. The book will provide you with information on how to apply the advanced formulation, advanced theory and advanced method of testing that are relevant to all engineering fields: mechanical, electrical, civil, materials and surface engineering. The topics are explained comprehensively, including the reliable test that one should perform in order to effectively investigate the strength and validation of the developed theory or model. I hope that the material is not too theoretical and that the reader finds the case study, formulation, testing method and the analysis helpful for tackling their own engineering and science based studies.

Diffractive Optics and Nanophotonics is devoted to achievements in diffractive optics, focusing on the creation of new nanophotonic components and devices, as well as instrumentation and available information technology. The author describes methods of calculation of diffractive optical elements to solve actual problems of nanophotonics. Coverage includes mathematical methods for calculation of diffraction gratings, calculation of modes of inhomogeneous waveguides, integral methods of calculation of electromagnetic field near the focus, and methods of calculation of diffractive optical elements generating vortex laser beams.

This book describes the physics behind the optical properties of plasmonic nanostructures focusing on chiral aspects. It explains in detail how the geometry determines chiral near-fields and how to tailor their shape and strength. Electromagnetic fields with strong optical chirality interact strongly with chiral molecules and, therefore, can be used for enhancing the sensitivity of chiroptical spectroscopy techniques. Besides a short review of the latest results in the field of plasmonically enhanced enantiomer discrimination, this book introduces the concept of chiral plasmonic near-field sources for enhanced chiroptical spectroscopy. The discussion of the fundamental properties of these light sources provides the theoretical basis for further optimizations and is of interest for researchers at the intersection of nano-optics, plasmonics and stereochemistry.

The first textbook on mathematical methods focusing on techniques for optical science and engineering, this text is ideal for upper division undergraduate and graduate students in optical physics. Containing detailed sections on the basic theory, the textbook places strong emphasis on connecting the abstract mathematical concepts to the optical systems to which they are applied. It covers many topics which usually only appear in more specialized books, such as Zernike polynomials, wavelet and fractional Fourier transforms, vector spherical harmonics, the z-transform, and the angular spectrum representation. Most chapters end by showing how the techniques covered can be used to solve an optical problem. Essay problems based on research publications and numerous exercises help to further strengthen the connection between the theory and its applications.

The rich palette of topics set out in this book provides a sufficiently broad overview of the developments in the field of quality control. By providing detailed information on various aspects of quality control, this book can serve as a basis for starting interdisciplinary cooperation, which has increasingly become an integral part of scientific and applied research.

Data Analysis Methods in Physical Oceanography is a practical reference guide to established and modern data analysis techniques in earth and ocean sciences. This second and revised edition is even more comprehensive with numerous updates, and an additional appendix on 'Convolution and Fourier transforms'. Intended for both students and established scientists, the five major chapters of the book cover data acquisition and recording, data processing and presentation, statistical methods and error handling, analysis of spatial data fields, and time series analysis methods. Chapter 5 on time series analysis is a book in itself, spanning a wide diversity of topics from stochastic processes and stationarity, coherence functions, Fourier analysis, tidal harmonic analysis, spectral and cross-spectral analysis, wavelet and other related methods for processing nonstationary data series, digital filters, and fractals. The seven appendices include unit conversions, approximation methods and nondimensional numbers used in geophysical fluid dynamics, presentations on convolution, statistical terminology, and distribution functions, and a number of important statistical tables. Twenty pages are devoted to references. Featuring: • An in-depth presentation of modern techniques for the analysis of temporal and spatial data sets collected in oceanography, geophysics, and other disciplines in earth and ocean sciences. • A detailed overview of oceanographic instrumentation and sensors - old and new - used to collect oceanographic data. • 7 appendices especially applicable to earth and ocean sciences ranging from conversion of units, through statistical tables, to terminology and non-dimensional parameters. In praise of the first edition: "(...)This is a very practical guide to the various statistical analysis methods used for obtaining information from geophysical data, with particular reference to oceanography(...) The book provides both a text for advanced students of the geophysical sciences and a useful reference volume for researchers." Aslib Book Guide Vol 63, No. 9, 1998 "(...)This is an excellent book that I recommend highly and will definitely use for my own research and teaching." EOS Transactions, D.A. Jay, 1999 "(...)In summary, this book is the most comprehensive and practical source of information on data analysis methods available to the physical oceanographer. The reader gets the benefit of extremely broad coverage and an excellent set of examples drawn from geographical observations." Oceanography, Vol. 12, No. 3, A. Plueddemann, 1999 "(...)Data Analysis Methods in Physical Oceanography is highly recommended for a wide range of readers, from the relative novice to the experienced researcher. It would be appropriate for academic and special libraries." E-Streams, Vol. 2, No. 8, P. Mofjelf, August 1999

In recent years, with the introduction of new media products, therehas been a shift in the use of programming languages from FORTRANor C to MATLAB for implementing numerical methods. This book makesuse of the powerful MATLAB software to avoid complex derivations,and to teach the fundamental concepts using the software to solvepractical problems. Over the years, many textbooks have beenwritten on the subject of numerical methods. Based on their courseexperience, the authors use a more practical approach and linkevery method to real engineering and/or science problems. The mainbenefit is that engineers don't have to know the mathematicaltheory in order to apply the numerical methods for solving theirreal-life problems. An Instructor's Manual presenting detailed solutions to all theproblems in the book is available online.

Hardbound. The publication of volume forty of Progress in Optics marks a significant milestone. Volume one was published in 1961, a year after the invention of the laser, an event which triggered a wealth of new and exciting developments. Many of them have been reported in the 234 review articles published in this series since its inception.The present volume contains six review articles on a variety of subjects of current research interests. The first is concerned with polarimetric optical fibers and sensors, and reviews the main efforts and achievements in this field within the last two decades.The second article presents a review of recent researches on digital optical computing. After introducing the basic concepts needed for understanding the developments in this field, some feasibility experiments as well as software studies are discussed.The next article deals largely with photodetection from the standpoint of the theory of

This volume addresses recent developments in mathematical modeling in three areas of optical science: diffractive optics, photonic band gap structures, and waveguides. Particular emphasis is on the formulation of mathematical models and the design and analysis of new computational approaches. The book contains cutting-edge discourses on emerging technology in optics that provides significant challenges and opportunities for applied mathematicians, researchers, and engineers. Each of the three topics is presented through a series of survey papers to provide a broad overview focusing on the mathematical models. Chapters present model problems, physical principles, mathematical and computational approaches, and engineering applications corresponding to each of the three areas. Although some of the subject matter is classical, the topics presented are new and represent the latest developments in their respective fields.

The state-of-the-art full-colored handbook gives a comprehensive introduction to the principles and the practice of calculation, layout, and understanding of optical systems and lens design. Written by reputed industrial experts in the field, this text introduces the user to the basic properties of optical systems, aberration theory, classification and characterization of systems, advanced simulation models, measuring of system quality and manufacturing issues. In this Volume Volume 2 continues the introduction given in volume 1 with the more advanced texts about the foundations of image formation. Emphasis is placed on an intuitive while theoretically exact presentation. More than 400 color graphs and selected references on the end of each chapter support this undertaking. From the contents: 17 Wave equation 18 Diffraction 19 Interference and coherence 20 Imaging 21 Imaging with partial coherence 22 Three dimensional imaging 23 Polarization 24 Polarization and optical imaging A1 Mathematical appendix Other Volumes Volume 1: Fundamentals of Technical Optics Volume 3: Aberration Theory and Correction of Optical Systems Volume 4: Survey of Optical Instruments Volume 5: Advanced Physical Optics

Most available books on computational electrodynamics are focused on FDTD, FEM, or other specific technique developed in microwave engineering. In contrast, Fourier Modal Method and Its Applications in Computational Nanophotonics is a complete guide to the principles and detailed mathematics of the up-to-date Fourier modal method of optical analysis. It takes readers through the implementation of MATLAB® codes for practical modeling of well-known and promising nanophotonic structures. The authors also address the limitations of the Fourier modal method. Features Provides a comprehensive guide to the principles, methods, and mathematics of the Fourier modal method Explores the emerging field of computational nanophotonics Presents clear, step-by-step, practical explanations on how to use the Fourier modal method for photonics and nanophotonics applications Includes the necessary MATLAB codes, enabling readers to construct their own code Using this book, graduate students and researchers can learn about nanophotonics simulations through a comprehensive treatment of the mathematics underlying the Fourier modal method and examples of practical problems solved with MATLAB codes.

Advances in Imaging and Electron Physics merges two long-running serials, Advances in Electronics and Electron Physics and Advances in Optical and Electron Microscopy. The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains. Contains contributions from leading authorities on imaging and electron physics that inform and update on the latest developments in the field Provides practitioners interested in microscopy, optics, image processing, mathematical morphology, electromagnetic fields, electron, and ion emission with a valuable resource Features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing

Modal Analysis provides a detailed overview of the theory of analytical and experimental modal analysis and its applications. Modal Analysis is the processes of determining the inherent dynamic characteristics of any system and using them to formulate a mathematical model of the dynamic behavior of the system. In the past two decades it has become a major technological tool in the quest for determining, improving and optimizing dynamic characteristics of engineering structures. Its main application is in mechanical and aeronautical engineering, but it is also gaining widespread use in civil and structural engineering, biomechanical problems, space structures, acoustic instruments and nuclear engineering. The only book to focus on the theory of modal analysis before discussing applications A relatively new technique being utilized more and more in recent years which is now filtering through to undergraduate courses Leading expert in the field

This book covers both the mathematics of inverse problems and optical systems design, and includes a review of the mathematical methods and Fourier optics. The first part of the book deals with the mathematical tools in detail with minimal assumption about prior knowledge on the part of the reader. The second part of the book discusses concepts in optics, particularly propagation of optical waves and coherence properties of optical fields that form the basis of the computational models used for image recovery. The third part provides a discussion of specific imaging systems that illustrate the power of the hybrid computational imaging model in enhancing imaging performance. A number of exercises are provided for readers to develop further understanding of computational imaging. While the focus of the book is largely on optical imaging systems, the key concepts are discussed in a fairly general manner so as to provide useful background for understanding the mechanisms of a diverse range of imaging modalities.

Comprehensively covers the basic principles and practice of Operational Modal Analysis (OMA). Covers all important aspects that are needed to understand why OMA is a practical tool for modal testingCovers advanced topics, including closely spaced modes, mode shape scaling, mode shape expansion and estimation of stress and strain in operational responsesDiscusses practical applications of Operational Modal AnalysisIncludes examples supported by MATLAB® applicationsAccompanied by a website hosting a MATLAB® toolbox for Operational Modal Analysis.