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What Every Engineer Should Know about Finite Element Analysis, Second Edition,-John Brauer 1993-05-05 Summarizing the history and basic concepts of finite elements in a manner easily understood by all engineers, this concise reference describes specific finite element software applications to structural, thermal, electromagnetic and fluid analysis - detailing the latest developments in design optimization, finite element model building and results processing and future trends.;Requiring no previous knowledge of finite elements analysis, the Second Edition provides new material on: p elements; iterative solvers; design optimization; dynamic open boundary finite elements; electric circuits coupled to finite elements; anisotropic and complex materials; electromagnetic eigenvalues; and automated pre- and post-processing software.;Containing more than 120 tables and computer-drawn illustrations - and including two full-colour plates - What Every Engineer Should Know About Finite Element Analysis should be of use to engineers, engineering students and other professionals involved with product design or analysis.

The Finite Element Method for Engineers-Kenneth H. Huebner 2001-09-07 A useful balance of theory, applications, and real-world examples The Finite Element Method for Engineers, Fourth Edition presents a clear, easy-to-understand explanation of finite element fundamentals and enables readers to use the method in research and in solving practical, real-life problems. It develops the basic finite element method mathematical formulation, beginning with physical considerations, proceeding to the well-established variation approach, and placing a strong emphasis on the versatile method of weighted residuals, which has shown itself to be important in nonstructural applications. The authors demonstrate the tremendous power of the finite element method to solve problems that classical methods cannot handle, including elasticity problems, general field problems, heat transfer problems, and fluid mechanics problems. They supply practical information on boundary conditions and mesh generation, and they offer a fresh perspective on finite element analysis with an overview of the current state of finite element optimal design. Supplemented with numerous real-world problems and examples taken directly from the authors' experience in industry and research, The Finite Element Method for Engineers, Fourth Edition gives readers the real insight needed to apply the method to challenging problems and to reason out solutions that cannot be found in any textbook.

The Finite Element Method: Its Basis and Fundamentals-Olek C Zienkiewicz 2005-05-26 The Sixth Edition of this influential best-selling book delivers the most up-to-date and comprehensive text and reference yet on the basis of the finite element method (FEM) for all engineers and mathematicians. Since the appearance of the first edition 38 years ago, The Finite Element Method provides arguably the most authoritative introductory text to the method, covering the latest developments and approaches in this dynamic subject, and is amply supplemented by exercises, worked solutions and computer algorithms. • The classic FEM text, written by the subject's leading authors • Enhancements include more worked examples and exercises • With a new chapter on automatic mesh generation and added materials on shape function development and the use of higher order elements in solving elasticity and field problems Active research has shaped The Finite Element Method into the pre-eminent tool for the modelling of physical systems. It maintains the comprehensive style of earlier editions, while presenting the systematic development for the solution of problems modelled by linear differential equations. Together with the second and third self-contained volumes (0750663219 and 0750663227), The Finite Element Method Set (0750664312) provides a formidable resource covering the theory and the application of FEM, including the basis of the method, its application to advanced solid and structural mechanics and to computational fluid dynamics. The classic introduction to the finite element method, by two of the subject's leading authors Any professional or student of engineering involved in understanding the computational modelling of physical systems will inevitably use the techniques in this key text

Advanced Finite Element Method in Structural Engineering-Yu-Qiu Long 2009-09-29 Advanced Finite Element Method in Structural Engineering systematically introduces the research work on the Finite Element Method (FEM), which was completed by Prof. Yu-qiu Long and his research group in the past 25 years. Seven original theoretical achievements - for instance, the Generalized Conforming Element method, to name one - and their applications in the fields of structural engineering and computational mechanics are discussed in detail. The book also shows the new strategies for avoiding five difficulties that exist in traditional FEM (shear-locking problem of thick plate elements; sensitivity problem to mesh distortion; non-convergence problem of non-conforming elements; accuracy loss problem of stress solutions by displacement-based elements; stress singular point problem) by utilizing foregoing achievements.

What Every Engineer Should Know about Finite Element Analysis-John R. Brauer 1988

The Finite Element Method Set-Olek C Zienkiewicz 2005-11-25 The sixth editions of these seminal books deliver the most up to date and comprehensive reference yet on the finite element method for all engineers and mathematicians. Renowned for their scope, range and authority, the new editions have been significantly developed in terms of both contents and scope. Each book is now complete in its own right and provides self-contained reference; used together they provide a formidable resource covering the theory and the application of the universally used FEM. Written by the leading professors in their fields, the three books cover the basis of the method, its application to solid mechanics and to fluid dynamics. * This is THE classic finite element method set, by two the subject's leading authors * FEM is a constantly developing subject, and any professional or student of engineering involved in the computational modelling of physical systems will inevitably use the techniques in these books * Fully up-to-date; ideal for teaching and reference

Stress in Subsoil and Methods of Final Settlement Calculation-J. Feda 2013-10-22 Developments in Geotechnical Engineering, Volume 18: Stress in Subsoil and Methods of Final Settlement Calculation reviews the method of settlement calculations based on stresses in the subsoil. This book is divided into three chapters. Chapter 1 deals with in situ stresses in the subsoil, while Chapter 2 focuses on the state of stress produced in the subsoil by external loads. The last chapter discusses the methods of calculating the final settlement, including remarks on the selection of deformation parameters. This publication also discusses the horizontal geostatic stress, surface loading of a half-space, method of oedometric compression, and finite element and allied methods. This volume is recommended for researchers and specialists of disciplines related to geotechnical engineering.

Moving Finite Element Method-Maria do Carmo Coimbra 2016-11-30 This book focuses on process simulation in chemical engineering with a numerical algorithm based on the moving finite element method (MFEM). It offers new tools and approaches for modeling and simulating time-dependent problems with moving fronts and with moving boundaries described by time-dependent convection-reaction-diffusion partial differential equations in one or two-dimensional space domains. It provides a comprehensive account of the development of the moving finite element method, describing and analyzing the theoretical and practical aspects of the MFEM for models in 1D, 1D+1d, and 2D space domains. Mathematical models are universal, and the book reviews successful applications of MFEM to solve engineering problems. It covers a broad range of application algorithm to engineering problems, namely on separation and reaction processes presenting and discussing relevant numerical applications of the moving finite element method derived from real-world process simulations.

Frontiers of Manufacturing Science and Measuring Technology III-Wen Pei Sung 2013-09-03 Collection of selected, peer reviewed papers from the 2013 3rd International Conference on Frontiers of Manufacturing Science and Measuring Technology (ICFMM 2013), July 30-31, 2013, LiJiang, China. Volume is indexed by Thomson Reuters CPCI-S (WoS). The 518 papers are grouped as follows: Chapter 1: Practice of Design Engineering and Researches for Industry; Chapter 2: Applied Materials Engineering; Chapter 3: Measuring Technologies, Signal and Data Processing; Chapter 4: Control, Automation, Communication and Information Technologies; Chapter 5: Environmental Engineering, Urban Development, Transportation and Logistics; Chapter 6: Organization of Manufacture and Engineering Management.

Proceedings-IEEE Power Electronics Society 1999 These proceedings address the general field of machines and drives. Topics covered include: permanent-magnet and switched-reluctance machines and converters; small and PM synchronous machines; and advanced testing procedures and modelling/simulation for motors and drives.

Issues in the Analysis and Testing of Textile Composites with Large Representative Volume Elements-Gerd Weissenbach 2004-12 The high degree of heterogeneity of textile composites was found to be the primary problem in analysis and testing. A concept was developed based on a description of the local variation of the material stiffness matrix using a spline interpolation. The role of this stiffness function is to facilitate the calculation of the material stiffness matrix at any given position or for arbitrary domains in the form of finite elements.Based on this approach, two different methods were developed. In the first method the average material stiffness matrix is calculated for a finite element and subsequently the elemental stiffness matrix of this element is assembled. In the second approach the elemental stiffness matrix is calculated directly using the local material stiffness at the integration points of the finite element. This concept was then applied to the plate twist test. The numerical analysis of this test was done in order to determine the influence of heterogeneity on the test results. It was shown that this test measures the in-plane shear modulus largely independent of the representative volume element (RVE) size. Both finite element approaches were then applied to the V-notched beam shear test, to investigate the applicability of this test to the measurement of the shear properties. The test set-up as well as numerical parameters of the finite element analysis of the test were studied. It was possible to derive limits for the applicability of the V-notched beam shear test in terms of RVE size, as well as set up guidelines for the finite element analysis of textile composites. With electronic speckle pattern interferometry, which enables full-field displacement and strain measurements, tensile tests were carried out on 3D-woven textile composite specimens. With the agreement of the experimental results and the theoretical predictions the validity of the developed approach was again shown.

A Unified Approach to the Finite Element Method and Error Analysis Procedures-Julian A. T. Dow 1998-11-09 A Unified Approach to the Finite Element Method and Error Analysis Procedures provides an in-depth background to better understanding of finite element results and techniques for improving accuracy of finite element methods. Thus, the reader is able to identify and eliminate errors contained in finite element models. Three different error analysis techniques are systematically developed from a common theoretical foundation: 1) modeling erros in individual elements; 2) discretization errors in the overall model; 3) point-wise errors in the final stress or strain results. Thoroughly class tested with undergraduate and graduate students. A Unified Approach to the Finite Element Method and Error Analysis Procedures is sure to become an essential resource for students as well as practicing engineers and researchers. New, simpler element formulation techniques, model-independent results, and error measures New polynomial-based methods for identifying critical points New procedures for evaluating sheer/strain accuracy Accessible to undergraduates, insightful to researchers, and useful to practitioners Taylor series (polynomial) based Intuitive elemental and point-wise error measures Essential background information provided in 12 appendices

Advances in Wireless Networks and Information Systems-Qi Luo 2010-09-30 The purpose of WNIS 2009, the 2009 International Conference on Wireless N- works and Information Systems, is to bring together researchers, engineers and practitioners interested on information systems and applications in the context of wireless networks and mobile technologies. Information systems and information technology are pervasive in the whole communications field, which is quite vast, encompassing a large number of research topics and applications: from practical issues to the more abstract th- retical aspects of communication; from low level protocols to high-level netwo- ing and applications; from wireless networking technologies to mobile infor- tion systems; many other topics are included in the scope of WNIS 2009. The WNIS 2009 will be held in Shanghai, China, in December 2009. We cordially invite you to attend the 2009 International Conference on Wireless N- works and Information Systems. We are soliciting papers that present recent results, as well as more speculative presentations that discuss research challenges, define new applications, and propose methodologies for evaluating and the road map for achieving the vision of wireless networks and mobile technologies. The WNIS 2009 is co-sponsored by the Institute of Electrical and Electronics Engineers, the IEEE Shanghai Section, the Intelligent Information Technology Application Research Association, Hong Kong and Wuhan Institute of Techn- ogy, China. The purpose of the WNIS 2009 is to bring together researchers and practitioners from academia, industry, and government to exchange their research ideas and results and to discuss the state of the art in the areas of the symposium.

Finite Element Based Damage Detection Algorithm for Military Bridging-John B. Kosmatka 2000

TEXTBOOK OF FINITE ELEMENT ANALYSIS-P. SESHU 2003-01-01 Designed for a one-semester course in Finite Element Method, this compact and well-organized text presents FEM as a tool to find approximate solutions to differential equations. This provides the student a better perspective on the technique and its wide range of applications. This approach reflects the current trend as the present-day applications range from structures to biomechanics to electromagnetics, unlike in conventional texts that view FEM primarily as an extension of matrix methods of structural analysis. After an introduction and a review of mathematical preliminaries, the book gives a detailed discussion on FEM as a technique for solving differential equations and variational formulation of FEM. This is followed by a lucid presentation of one-dimensional and two-dimensional finite elements and finite element formulation for dynamics. The book concludes with some case studies that focus on industrial problems and Appendices that include mini-project topics based on near-real-life problems. Postgraduate/Senior undergraduate students of civil, mechanical and aeronautical engineering will find this text extremely useful; it will also appeal to the practising engineers and the teaching community.

Finite Elements in Fracture Mechanics-Meinhard Kuna 2013-07-19 Fracture mechanics has established itself as an important discipline of growing interest to those working to assess the safety, reliability and service life of engineering structures and materials. In order to calculate the loading situation at cracks and defects, nowadays numerical techniques like finite element method (FEM) have become indispensable tools for a broad range of applications. The present monograph provides an introduction to the essential concepts of fracture mechanics, its main goal being to procure the special techniques for FEM analysis of crack problems, which have to date only been mastered by experts. All kinds of static, dynamic and fatigue fracture problems are treated in two- and three-dimensional elastic and plastic structural components. The usage of the various solution techniques is demonstrated by means of sample problems selected from practical engineering case studies. The primary target group are graduate students, researchers in academia and engineers in practice.

The Mathematics of Finite Elements and Applications-J. R. Whiteman 1994 World leaders in diverse disciplines, whose common interest is finite element methods, address the latest developments in the field. Mathematical theory, engineering and scientific applications, computational techniques, large scale analysis and implementation of related methods are among the subjects discussed.

Inelastic Analysis of Structures-Milan Jirasek 2001-12-21 The modeling of mechanical properties of materials and structures is a complex and wide-ranging subject. In some applications, it is sufficient to assume that the material remains elastic, i.e. that the deformation process is fully reversible and the stress is a unique function of strain. However, such a simplified assumption is appropriate only within a limited range, and in general must be replaced by a more realistic approach that takes into account the inelastic processes such as plastic yielding or cracking. This book presents a comprehensive treatment of the most important areas of plasticity and of time-dependent inelastic behavior (viscoplasticity of metals, and creep and shrinkage of concrete). It covers structural aspects such as: * incremental analysis * limit analysis * shakedown analysis * optimal design * beam structures subjected to bending and torsion * yield line theory of plates * slip line theory * size effect in structures * creep and shrinkage effects in concrete structures. The following aspects of the advanced material modeling are presented: * yield surfaces for metals and plastic-frictional materials * hardening and softening * stress-return algorithms * large-strain formulations * thermodynamic framework * microplane models * localization of plastic strain. Inelastic Analysis of Structures is a textbook for basic and advanced courses on plasticity, with a slight emphasis on structural engineering applications, but with a wealth of material for geotechnical, mechanical, aerospace, naval, petroleum and nuclear engineers. The text is constructed in a very didactical way, while the mathematics has been kept rigorous.

Physics Briefs- 1993

The Finite Element Method in the 1990's-E. Oñate 1991

The Finite Element Method for Elliptic Problems-P.G. Ciarlet 1978-01-01 The objective of this book is to analyze within reasonable limits (it is not a treatise) the basic mathematical aspects of the finite element method. The book should also serve as an introduction to current research on this subject. On the one hand, it is also intended to be a working textbook for advanced courses in Numerical Analysis, as typically taught in graduate courses in American and French universities. For example, it is the author's experience that a one-semester course (on a three-hour per week basis) can be taught from Chapters 1, 2 and 3 (with the exception of Section 3.3), while another one-semester course can be taught from Chapters 4 and 6. On the other hand, it is hoped that this book will prove to be useful for researchers interested in advanced aspects of the numerical analysis of the finite element method. In this respect, Section 3.3, Chapters 5, 7 and 8, and the sections on "Additional Bibliography and Comments should provide many suggestions for conducting seminars.

Soft Soil Engineering-Dave H. Chan 2006-09-28 Soft soils present particular challenges to engineers and an understanding of the specific characteristics of these soils is indispensable. Laboratory techniques such as numerical modelling, theoretical analysis and constitutive modelling give new insights into soft soil material behaviour, while large-scale testing in the field provides important information in areas such as slope stability and soft soil improvements. This collection of papers from the Fourth International Conference on Soft Soil Engineering, Vancouver, 2006, presents an international appraisal of current research and new advances in engineering practices, illustrating the theory with relevant case studies. Geotechnical professionals, engineers, academics and researchers working in the areas of soft ground engineering and soft soil engineering will find this a valuable book.

Integrated Electronics-S. Sarkar 1964

Finite Element Analysis Concepts-J. E. Akin 2010 Young engineers are often required to utilize commercial finite element software without having had a course on finite element theory. That can lead to computer-aided design errors. This book outlines the basic theory, with a minimum of mathematics, and how its phases are structured within a typical software. The importance of estimating a solution, or verifying the results, by other means is emphasized and illustrated. The book also demonstrates the common processes for utilizing the typical graphical icon interfaces in commercial codes. in particular, the book uses and covers the widely utilized SolidWorks solid modeling and simulation system to demonstrate applications in heat transfer, stress analysis, vibrations, buckling, and other fields. The book, with its detailed applications, will appeal to upper-level undergraduates as well as engineers new to industry.

Cellular Polymers IV- 1997

Advances in Computer Science, Environment, Ecoinformatics, and Education, Part II-Sally Lin 2011-08-09 This 5-volume set (CCIS 214-CCIS 218) constitutes the refereed proceedings of the International Conference on Computer Science, Environment, Ecoinformatics, and Education, CSEE 2011, held in Wuhan, China, in July 2011. The 525 revised full papers presented in the five volumes were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on information security, intelligent information, neural networks, digital library, algorithms, automation, artificial intelligence, bioinformatics, computer networks, computational system, computer vision, computer modelling and simulation, control, databases, data mining, e-learning, e-commerce, e-business, image processing, information systems, knowledge management and knowledge discovering, mulitimedia and its apllication, management and information system, moblie computing, natural computing and computational intelligence, open and innovative education, pattern recognition, parallel and computing, robotics, wireless network, web application, other topics connecting with computer, environment and ecoinformatics, modeling and simulation, environment restoration, environment and energy, information and its influence on environment, computer and ecoinformatics, biotechnology and biofuel, as well as biosensors and bioreactor.

The Mathematics of Finite Elements and Applications VI-John Robert Whiteman 1988

Computational Bioengineering-M. Cerrolaza 2004 This book is a significant contribution to the state of the art in the field of computational bioengineering from the need for a living human database to meshless methods in biomechanics, from computational mechanobiology to the evaluation of stresses in hip prosthesis replacement, from lattice Boltzmann methods for analyzing blood flow to the analysis of fluid movement in long bones, among other interesting topics treated herein. Well-known international experts in bioengineering have contributed to the book, giving it a unique style and cutting-edge material for graduate students, academic researchers and design bioengineers, as well as those interested in getting a better understanding of such complex and fascinating human and living processes.

Computer Software in Structural Analysis-Irwin Berman 1970

I-DEAS Systan Engineering Analysis System Dynamics User's Guide- 1988

Practical Finite Element Analysis-Nitin S. Gokhale 2008 Highlights of the book: Discussion about all the fields of Computer Aided Engineering, Finite Element Analysis Sharing of worldwide experience by more than 10 working professionals Emphasis on Practical usuage and minimum mathematics Simple language, more than 1000 colour images International quality printing on specially imported paper Why this book has been written ... FEA is gaining popularity day by day & is a sought after dream career for mechanical engineers. Enthusiastic engineers and managers who want to refresh or update the knowledge on FEA are encountered with volume of published books. Often professionals realize that they are not in touch with theoretical concepts as being pre-requisite and find it too mathematical and Hi-Fi. Many a times these books just end up being decoration in their book shelves ... All the authors of this book are from IITÂ€Â™s & IISc and after joining the industry realized gap between university education and the practical FEA. Over the years they learned it via interaction with experts from international community, sharing experience with each other and hard route of trial & error method. The basic aim of this book is to share the knowledge & practices used in the industry with experienced and in particular beginners so as to reduce the learning curve & avoid reinvention of the cycle. Emphasis is on simple language, practical usage, minimum mathematics & no pre-requisites. All basic concepts of engineering are included as & where it is required. It is hoped that this book would be helpful to beginners, experienced users, managers, group leaders and as additional reading material for university courses.

Computational Methods in Engineering & Science-Zhenhan Yao 2007-12-31 Here are the printed proceedings of EPMESC X, held on August 21-23, 2006 in Sanya, Hainan Island of China. It includes 14 full papers of plenary and semi-plenary lectures and approximately 166 one-page summaries. The accompanying CD-ROM includes all 180 full papers presented at the conference.

Year Book - Association of Iron and Steel Engineers-Association of Iron and Steel Engineers 1987

Finite Element Method in Structural Analysis-University of Michigan. Engineering Summer Conferences 1992

Anaphora in Celtic and Universal Grammar-R. Hendrick 2012-12-06 This book is based in large part on fieldwork that I conducted in Brittany and Wales in 1983 and 1985. I am thankful for a Fulbright Award for Research in Western Europe and a Faculty Development Award from the University of North Carolina that funded that fieldwork. lowe a less tangible, but no less real, debt to Steve Anderson, G. M. Awbery, Steve Harlow and Jim McCloskey whose work initially sparked my interest, and led me to undertake this project. I want to thank Joe Emonds and Alec Marantz who read portions of Chapter 3 and 5. I am particularly grateful though to Kathleen Flanagan, Frank Heny and two anonymous referees who read a dyslexic and schizophrenic manuscript, providing me with criticisms that improved this final version considerably. The Welsh nationalist community in Aberstwyth and its Breton coun terpart in Quimper helped make the time I spent in Wales and Brittany productive. I am indebted to Thomas Davies, Partick Favreau, Lukian Kergoat, Sue Rhys, John Williams and Beatrice among others for sharing their knowledge of their languages with me. Catrin Davies and Martial Menard were especially patient and helpful. Without their assistance this work would have been infinitely poorer. I am hopeful that this book will help stimulate more interest in the Celtic languages and culture, and assist, even in a small way, those in Wales and Brittany who struggle to keep their language and culture strong.

Finite Element Analysis for Engineers-Frank Rieg 2014-10-01 The Finite Element Analysis today is the leading engineer's tool to analyze structures concerning engineering mechanics, i.e. statics, heat flows, eigenvalue problems and many more. Thus, this book wants to provide well-chosen aspects of this method for students of engineering sciences and engineers already established in the job in such a way, that they can apply this knowledge immediately to the solution of practical problems. Over 30 examples along with all input data files on DVD allow a comprehensive practical training of engineering mechanics. Two very powerful FEA programs are provided on DVD, too: Z88, the open source finite elements program for static calculations, as well as Z88Aurora, the very comfortable to use and much more powerful freeware finite elements program which can also be used for non-linear calculations, stationary heat flows and eigenproblems, i.e. natural frequencies. Both are full versions with which arbitrarily big structures can be computed – only limited by your computer memory and your imagination. For Z88 all sources are fully available, so that the reader can study the theoretical aspects in the program code and extend it if necessary. Z88 and Z88Aurora are ready-to-run for Windows and LINUX as well as for Mac OS X. For Android devices there also exists an app called Z88Tina which can be downloaded from Google Play Store.

Analysis and Modelling of Non-Steady Flow in Pipe and Channel Networks-Vinko Jovic 2013-03-08 Analysis and Modelling of Non-Steady Flow in Pipe and Channel Networks deals with flows in pipes and channel networks from the standpoints of hydraulics and modelling techniques and methods. These engineering problems occur in the course of the design and construction of hydroenergy plants, water-supply and other systems. In this book, the author presents his experience in solving these problems from the early 1970s to the present day. During this period new methods of solving hydraulic problems have evolved, due to the development of computers and numerical methods. This book is accompanied by a website which hosts the author's software package, Simpip (an abbreviation of simulation of pipe flow) for solving non-steady pipe flow using the finite element method. The program also covers flows in channels. The book presents the numerical core of the SimpipCore program (written in Fortran). Key features: Presents the theory and practice of modelling different flows in hydraulic networks Takes a systematic approach and addresses the topic from the fundamentals Presents numerical solutions based on finite element analysis Accompanied by a website hosting supporting material including the SimpipCore project as a standalone program Analysis and Modelling of Non-Steady Flow in Pipe and Channel Networks is an ideal reference book for engineers, practitioners and graduate students across engineering disciplines.

Elasto-Plastic and Damage Analysis of Plates and Shells-George Z Voyiadjis 2008-07-23 Shells and plates are critical structures in numerous engineering applications. Analysis and design of these structures is of continuing interest to the scienti c and engineering communities. Accurate and conservative assessments of the maximum load carried by a structure, as well as the equilibrium path in both the elastic and inelastic range, are of paramount importance to the engineer. The elastic behavior of shells has been closely investigated, mostly by means of the nite element method. Inelastic analysis however, especially accounting for damage effects, has received much less attention from researchers. In this book, we present a computational model for nite element, elasto-plastic, and damage analysis of thin and thick shells. Formulation of the model proceeds in several stages. First, we develop a theory for thick spherical shells, providing a set of shell constitutive equations. These equations incorporate the effects of transverse shear deformation, initial curvature, and radial stresses. The proposed shell equations are conveniently used in nite element analysis. 0 AsimpleC quadrilateral, doubly curved shell element is developed. By means of a quasi-conforming technique, shear and membrane locking are prevented. The element stiffness matrix is given explicitly, making the formulation computationally ef cient. We represent the elasto-plastic behavior of thick shells and plates by means of the non-layered model, using an Updated Lagrangian method to describe a small-strain geometric non-linearity. For the treatment of material non-linearities, we adopt an Iliushin's yield function expressed in terms of stress resultants, with isotropic and kinematic hardening rules.

Bulletin of the Russian Academy of Sciences- 2005

Theory of Nonlinear Operators- 1977

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