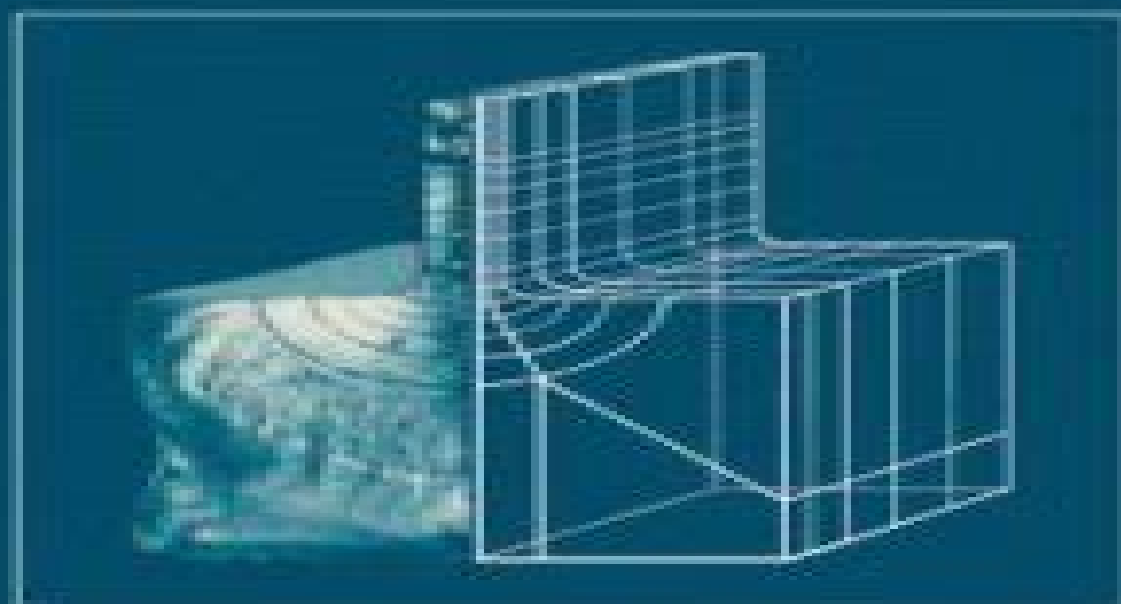


SOLID MECHANICS AND ITS APPLICATIONS

M.H. Aliabadi and D.P. Rooke

Numerical Fracture Mechanics



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Numerical Fracture Mechanics

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Numerical Fracture Mechanics:

Numerical Fracture Mechanics M.H. Aliabadi,D.P. Rooke,1991-07-31 The purpose of this book is to present describe and demonstrate the use of numerical methods in solving crack problems in fracture mechanics The text concentrates to a large extent on the application of the Boundary Element Method BEM to fracture mechanics although an up to date account of recent advances in other numerical methods such as the Finite Element Method is also presented The book is an integrated presentation of modern numerical fracture mechanics it contains a compilation of the work of many researchers as well as accounting for some of authors most recent work on the subject It is hoped that this book will bridge the gap that exists between specialist books on theoretical fracture mechanics on one hand and texts on numerical methods on the other Although most of the methods presented are the latest developments in the field of numerical fracture mechanics the authors have also included some simple techniques which are essential for understanding the physical principles that govern crack problems in general Different numerical techniques are described in detail and where possible simple examples are included as well as test results for more complicated problems The book consists of six chapters The first chapter initially describes the historical development of theoretical fracture mechanics before proceeding to present the basic concepts such as energy balance stress intensity factors residual strength and fatigue crack growth as well as briefly describing the importance of stress intensity factors in corrosion and residual stress cracking

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Numerical Methods in Fracture Mechanics A. R. Luxmoore,D. R. J. Owen,1978 A Compendium of Special Crack-tip Elements and Techniques in Numerical Fracture Mechanics V. Murti,Somasundaram Valliappan,1986

Numerical Methods in Fracture Mechanics, 1990 Numerical Methods in Fracture Mechanics Anthony Roger Luxmoore, D. R. J. Owen, 1990 **Numerical Fracture Mechanics Using Finite Element Method** Viriyawan Murti, 1986

Advances in the use of numerical fracture mechanics NAFEMS Awareness Seminar, 2000 **Coupled Experimental-numerical Fracture Mechanics** Hadi Haeri, 2015-03-11 **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 includes graduate students researchers in academia and engineers in practice.

Engineering Fracture Mechanics D. R. J. Owen, A. J. Fawkes, 1983 Numerical Methods in Fracture Mechanics International Conference on Numerical Methods in Fracture Mechanics (Swansea), 1984 **Fracture mechanics of concrete: Structural application and numerical calculation** George C. Sih, A. DiTomasso, 2012-12-06

Concrete has traditionally been known as a material used widely in the construction of roads bridges and buildings. Since cost effectiveness has always been one of the more important aspects of design concrete when reinforced and or prestressed is finding more use in other areas of application such as floating marine structures storage tanks nuclear vessel containments and a host of other structures. Because of the demand for concrete to operate under different loading and environmental conditions increasing attention has been paid to study concrete specimens and structure behavior. A subject of major concern is how the localized segregation of the constituents in concrete would affect its global behavior. The degree of nonhomogeneity due to material property and damage by yielding and or cracking depends on the size scale and loading rate under consideration. Segregation or clustering of aggregates at the macroscopic level will affect specimen behavior to a larger degree than it would to a large structure such as a dam. Hence a knowledge of concrete behavior over a wide range of scale is desired. The parameters governing micro and macro cracking and the techniques for evaluating and observing the damage in concrete need to be better understood. This volume is intended to be an attempt in this direction. The application of Linear Elastic Fracture Mechanics to concrete is discussed in several of the chapters.

Fracture Mechanics Satya N. Atluri, Ashok Saxena, David L. McDowell, 1992

Papers of the June 1990 meeting held in Atlanta Ga. The first volume 47 papers concentrates on experimental and theoretical aspects of fracture mechanics. Volume two 26 papers covers numerical and computational approaches. Topics include ductile fracture high

temperature and time dependent fracture. *Fracture Mechanics* Nestor Perez, 2016-08-13 The second edition of this textbook includes a refined presentation of concepts in each chapter additional examples new problems and sections such as conformal mapping and mechanical behavior of wood while retaining all the features of the original book The material included in this book is based upon the development of analytical and numerical procedures pertinent to particular fields of linear elastic fracture mechanics LEFM and plastic fracture mechanics PFM including mixed mode loading interaction The mathematical approach undertaken herein is coupled with a brief review of several fracture theories available in cited references along with many color images and figures Dynamic fracture mechanics is included through the field of fatigue and Charpy impact testing [Proceedings of the Third International Conference on Numerical Methods in Fracture Mechanics](#) Anthony Roger Luxmoore, D. R. J. Owen, 1984 *Numerical Calculations in Fracture Mechanics*, 1987 *Numerical Assessments of Cracks in Elastic-Plastic Materials* Huang Yuan, 2013-11-11 In this book a systematic discussion of crack problems in elastic plastic materials is presented The state of the art in fracture mechanics research and assessment of cracks is documented with the help of analytic asymptotic methods as well as finite element computations After a brief introduction to fracture mechanics the two parameter concept for stationary cracks is studied in addition to the issues in three dimensional crack fields under coupling with strong out of plane effects Cracks along interfaces and crack growth problems under mixed mode conditions are also treated A systematic study of stress singularities for different notches is accompanied by detailed finite element computations **Fracture Mechanics** Fazil Erdogan, 1995 **Deformation and Fracture in Materials** Anoop Kumar Mukhopadhyay, Dhaneshwar Mishra, 2024-08-27 This book provides information on the basics of deformation and fracture in materials and on current state of the art experimental and numerical theoretical methods including data driven approaches in the deformation and fracture study of materials The blend of experimental test methods and numerical techniques to study deformation and fracture in materials is discussed In addition the application of data driven approaches in predicting material performance in different types of loading and loading environments is illustrated Features Includes clear insights on deformation and fracture in materials with clear explanations of mechanics and defects relating to them Provides effective treatments of modern numerical simulation methods Explores applications of data driven approaches such as artificial intelligence machine learning and computer vision Reviews simple and basic experimental techniques to understand the concepts of deformation and fracture in materials Details modeling and simulation strategies of mechanics of materials at different scales This book is aimed at researchers and graduate students in fracture mechanics finite element methods and materials science

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