1. Record Nr. UNINA9910135020603321

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Titolo	Theory of elasticity and stress concentration / / Yukitaka Murakami
Pubbl/distr/stampa	Chichester, West Sussex, United Kingdom : , : John Wiley & Sons, Incorporated, , 2017
ISBN	1-119-27410-9 1-5231-1115-1 1-119-27413-3 1-119-27406-0
Descrizione fisica	1 online resource (474 p.)
Disciplina	620.1/1232
Soggetti	Elasticity Stress concentration
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Title Page ; Copyright; Contents; Preface; Preface for Part I: Theory of Elasticity ; Part I Nomenclature ; Preface for Part II: Stress Concentration ; Part II Nomenclature ; Acknowledgments; Part I Theory of Elasticity ; Chapter 1 Stress ; 1.1 Stress at the Surface of a Body; 1.1.1 Normal Stress; 1.1.2 Shear Stress; 1.2 Stress in the Interior of a Body; 1.3 Two Dimensional Stress, Three Dimensional Stress and Stress Transformation; 1.3.1 Normal Stress; 1.3.2 Shear Stress; 1.3.3 Stress in an Arbitrary Direction; 1.3.4 Principal Stresses; 1.3.5 Principal Shear Stresses; Problems of Chapter 1 Chapter 2 Strain 2.1 Strains in Two Dimensional Problems; 2.2 Strains in Three Dimensional Problems; 2.3 Strain in an Arbitrary Direction; 2.3.1 Two Dimensional Case; 2.3.2 Three Dimensional Case; 2.4 Principal Strains; 2.5 Conditions of Compatibility; Problems of Chapter 2 ; Reference; Chapter 3 Relationship between Stresses and Strains: Generalized Hookes Law ; Problems of Chapter 3; Chapter 4 Equilibrium Equations ; Problems of Chapter 4; Chapter 5 Saint Venants Principle and Boundary Conditions ; 5.1 Saint Venants Principle; 5.2 Boundary Conditions; 5.2.1 Stress Boundary Conditions 5.2.2 Displacement Boundary Conditions5.2.3 Mixed Boundary

Conditions; Problems of Chapter 5 ; Chapter 6 Two Dimensional Problems ; 6.1 Plane Stress and Plane Strain; 6.1.1 Plane Stress; 6.1.2 Plane Strain; 6.2 Basic Conditions for Exact Solutions: Nature of Solutions; 6.3 Airys Stress Function; 6.4 Hollow Cylinder; 6.5 Stress Concentration at a Circular Hole; 6.6 Stress Concentration at an Elliptical Hole; 6.7 Stress Concentration at a Hole in a Finite Width Plate; 6.8 Stress Concentration at a Crack; 6.9 Stress Field due to a Point Force Applied at the Edge of a Semi-Infinite Plate
6.10 Circular Disk Subjected to Concentrated ForceProblems of Chapter 6 ; Appendix of Chapter 6; References; Chapter 7 Torsion of a Bar with Uniform Section ; 7.1 Torsion of Cylindrical Bars; 7.2 Torsion of Bars Having Thin Closed Section; 7.3 Saint Venants Torsion Problems; 7.4 Stress Function in Torsion; 7.4.1 Equilibrium Condition; 7.4.2 Compatibility Equation; 7.4.3 Boundary Conditions; 7.5 Membrane Analogy: Solution of Torsion Problems by Using the Deformation of Pressurized Membrane; 7.6 Torsion of Bars Having a Thin Unclosed Cross Section
7.7 Comparison of Torsional Rigidity between a Bar with an Open Section and a Bar with a Closed SectionProblems of Chapter 7 ; Reference; Chapter 8 Energy Principles ; 8.1 Strain Energy; 8.2 Uniqueness of the Solutions of Elasticity Problems; 8.3 Principle of Virtual Work; 8.4 Principle of Minimum Potential Energy; 8.5 Castiglianos Theorem; 8.6 The Reciprocal Theorem; Problems of Chapter 8; Reference; Chapter 9 Finite Element Method ; 9.1 FEM for One Dimensional Problems; 9.2 Analysis of Plane Stress Problems by the Finite Element Method
9.2.1 Approximation of 2D Plate Problems by a Set of Triangular Elements

Sommario/riassunto

"Theory of Elasticity and Stress Concentration comprehensively covers elasticity and stress concentration and demonstrates how to apply the theory to practical engineering problems. It presents a new approach to the topic without the need for complicated mathematics and the principles and meaning of stress concentration are covered without reliance on numerical analysis. Examples are included throughout and end of chapter problems and solutions are also provided."--