1. Record Nr. UNINA9910784615503321 Autore **Taylor David** Titolo The theory of critical distances [[electronic resource]]: a new perspective in fracture mechanics / / David Taylor Amsterdam; ; London, : Elsevier, c2007 Pubbl/distr/stampa **ISBN** 1-281-07670-8 9786611076702 0-08-055472-5 Descrizione fisica 1 online resource (307 p.) Classificazione UF 1800 UF 3150 Disciplina 620.1126 Soggetti Fracture mechanics Fracture mechanics - Mathematical models Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Includes bibliographical references and index. Nota di bibliografia Nota di contenuto Front Cover: The Theory of Critical Distances: A New Perspective in Fracture Mechanics; Copyright Page; Contents; Preface; Nomenclature; Chapter 1. Introduction; 1.1 Stress-Strain Curves; 1.2 Failure Mechanisms; 1.3 Stress Concentrations; 1.4 Elastic Stress Fields for Notches and Cracks; 1.5 Fracture Mechanics; 1.6 The Failure of Notched Specimens; 1.7 Finite Element Analysis; 1.8 Concluding Remarks: Limitations and Challenges in Failure Prediction; Chapter 2. The Theory of Critical Distances: Basics; 2.1 Introduction; 2.2 Example 1: Brittle Fracture in a Notched Specimen 2.3 Example 2: Fatigue Failure in an Engineering Component2.4 Relating the TCD to LEFM; 2.5 Finding Values for the Material Constants; 2.6 Some Other TCD Methods: The LM, AM and VM; 2.7 Example 3: Predicting Size Effects; 2.8 Concluding Remarks; Chapter 3. The Theory of Critical Distances in Detail; 3.1 Introduction; 3.2 History; 3.3 Related Theories; 3.4 What is the TCD? Towards a General Definition; Chapter 4. Other Theories of Fracture; 4.1 Introduction; 4.2 Some Classifications; 4.3 Mechanistic Models; 4.4 Statistical Models;

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Sommario/riassunto

Critical distance methods are extremely useful for predicting fracture and fatigue in engineering components. They also represent an important development in the theory of fracture mechanics. Despite being in use for over fifty years in some fields, there has never been a book about these methods - until now. So why now? Because the increasing use of computer-aided stress analysis (by FEA and other techniques) has made these methods extremely easy to use in practical situations. This is turn has prompted researchers to re-examine the underlying theory with renewed interest. The book be