1. Record Nr. UNINA9910872199103321

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Titolo	Recent Development of Alternating Current Field Measurement Combine with New Technology / / by Xin'an Yuan, Wei Li, Jianming Zhao, Xiaokang Yin, Xiao Li, Jianchao Zhao
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9742-24-2
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (152 pages)
Altri autori (Persone)	LiWei ZhaoJianming YinXiaokang LiXiao ZhaoJianchao
Disciplina	624.15
Soggetti	Engineering geology Petrology Geoengineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Contents -- High Sensitivity Rotating Alternating Current Field Measurement for Arbitrary-Angle Underwater Cracks -- 1 Introduction -- 2 Induced Rotating Alternating Current Field -- 2.1 RACFM Theoretical Model -- 2.2 FEM Modeling and Analyzing -- 3 RACFM System for Arbitrary-Angle Cracks Measurement -- 3.1 RACFM System -- 3.2 RACFM Probe -- 3.3 RACFM Waterproof Shell -- 4 RACFM System Testing and Discussing -- 4.1 Experiment System -- 4.2 Discussion -- 5 Conclusion -- References -- Detection of Cracks in Metallic Objects by Arbitrary Scanning Direction Using a Double U-Shaped Orthogonal ACFM Probe -- 1 Introduction -- 2 FEM Model of Double U-Shaped Orthogonal ACFM Probe -- 3 Cracks Detection Experiments -- 4 Conclusion -- References -- A Novel Fatigue Crack Angle Quantitative Monitoring Method Based on Rotating Alternating Current Field Measurement -- 1 Introduction -- 2 Theoretical Model -- 3 Finite Element Analysis -- 3.1 Model Set Up -- 3.2 Characteristic Signal Analysis of Cracks with Different Angles -- 3.3 Characteristic

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Sommario/riassunto

This open access book can be divided into three parts. In part 1, three articles are employed to introduce the RACFM technology. In part 2, two articles are introduced to explain the Multifrequency ACFM. In part 3, three articles are introduced to explain the visualization research in ACFM. With the development of ACFM detection technology, traditional single excitation frequency and single direction excitation structures cannot meet the requirements of multiple types of defect detection (such as cracks at different angles, and buried defects). New types of excitation structures and methods have been proposed, mainly including rotating electromagnetic field detection, multi-frequency detection, and defects visual algorithm. The changes in the excitation structure and signal mentioned above have expanded the scope of application of ACFM detection and provided opportunities for the cross-integration and innovation of ACFM detection technology with other advanced detection methods. This book mainly focuses on the study of the rotating alternating current field measurement (RACFM), the multifrequency ACFM, and the visualization method in ACFM.