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Theory and Methodology of Electromagnetic Ultrasonic Guided Wave Imaging  
NASA's University Program

**SCARLET BRENDAN****Fusion Energy Update** Springer

Given that for centuries, the standard tool to understand diseases in tissues was the microscope and that its major limitation was that only excised tissue could be used, recent technology now permits the examination of diseased tissue in vivo. Optical coherence tomography (OCT) has promising potential when applied to coronary artery disease. OCT has the capability to identify coronary plaque and to distinguish between plaques that are stable and unstable. If the plaques are stable then OCT can direct percutaneous intervention (angioplasty or stenting). Optical coherence tomography is a light-based imaging technology that allows for very high resolution imaging in biological tissues. It has been first applied in ophthalmology, where it soon became the golden standard for the assessment of (epi-) retinal processes. The unique imaging capabilities have raised the interest of researchers and clinicians in the field of cardiovascular disease, since OCT offers unique possibilities to study atherosclerosis pathophysiology in vivo. With over 1.1M Americans having a heart attack this year because of unstable plaque rupture, OCT may have an increasingly important role in the early diagnosis of coronary artery disease. This unique publication offers the reader the basic background to OCT and its role in the diagnosis and management of coronary artery disease. The Handbook of Optical Coherence Tomography in Cardiovascular Research introduces the cardiovascular application of this technology. Clinicians, biologists, engineers and physicist are discussing different aspects of cardiovascular OCT application in a multidisciplinary approach. The handbook offers the readership a concise overview on the current state of the art of vascular OCT imaging and sheds light on a variety of exciting new developments. The physics, technical principles of OCT and its application in a broad spectrum of cardiovascular research areas are summarized by highly recognized specialists. The potential of OCT in peripheral and coronary arteries and in developmental cardiology are described. Each research area is introduced by a clinical expert in the field

followed by discussion of different aspects from an engineering, biomedical and clinical perspective. Specifically, the current capabilities for plaque characterization, detection of vulnerable plaque, guidance of interventional procedures, Doppler-assessment, and molecular contrast imaging are being described. The Handbook of Optical Coherence Tomography in Cardiovascular Research targets researchers and clinicians involved in the field of atherosclerosis. The summary of basic physics, engineering solutions, pre-clinical and clinical application covers all relevant aspects and will be a valuable reference source.

*High Energy Physics Index* Cambridge University Press  
Intended for advanced undergraduates and beginning graduates with some basic knowledge of optics and quantum mechanics, this text begins with a review of the relevant results of quantum mechanics, before turning to the electromagnetic interactions involved in slowing and trapping atoms and ions, in both magnetic and optical traps. The concluding chapters discuss a broad range of applications, from atomic clocks and studies of collision processes, to diffraction and interference of atomic beams at optical lattices and Bose-Einstein condensation.

**Government Reports Annual Index** Frontiers Media SA  
Written by respected experts, this book highlights the latest findings on the electromagnetic ultrasonic guided wave (UGW) imaging method. It introduces main topics as the Time of Flight (TOF) extraction method for the guided wave signal, tomography and scattering imaging methods which can be used to improve the imaging accuracy of defects. Further, it offers essential insights into how electromagnetic UGW can be used in nondestructive testing (NDT) and defect imaging. As such, the book provides valuable information, useful methods and practical experiments that will benefit researchers, scientists and engineers in the field of NDT.

**Scientific and Technical Aerospace Reports** Theory and Methodology of Electromagnetic Ultrasonic Guided Wave Imaging  
Theory and Methodology of Electromagnetic Ultrasonic Guided Wave Imaging  
Springer  
*Plasma Physics Index* Springer Science & Business Media  
Various cosmological observations support not only cosmological

inflation in the early universe, which is also known as exponential cosmic expansion, but also that the expansion of the late-time universe is accelerating. To explain this phenomenon, the existence of dark energy is proposed. In addition, according to the rotation curve of galaxies, the existence of dark matter, which does not shine, is also suggested. If primordial gravitational waves are detected in the future, the mechanism for realizing inflation can be revealed. Moreover, there exist two main candidates for dark matter. The first is a new particle, the existence of which is predicted in particle physics. The second is an astrophysical object which is not found by electromagnetic waves. Furthermore, there are two representative approaches to account for the accelerated expansion of the current universe. One is to assume the unknown dark energy in general relativity. The other is to extend the gravity theory to large scales. Investigation of the origins of inflation, dark matter, and dark energy is one of the most fundamental problems in modern physics and cosmology. The purpose of this book is to explore the physics and cosmology of inflation, dark matter, and dark energy. *Active Experiments in Space: Past, Present, and Future* CRC Press  
Offers an authoritative synthesis of knowledge of the planet Mercury after the MESSENGER mission, for researchers and students in planetary science.

**Nuclear Science Abstracts** MDPI

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

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