Acoustical Imaging: Techniques and Applications for Engineers

Woon Siong Gan
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Woon Siong Gan's *Acoustical Imaging* is a comprehensive coverage of the important aspects of acoustical imaging. It includes mathematical derivations of the theory of sound propagation and includes the nonlinear effects that may be evident in materials. It further discusses the mathematics used in signal processing and the common methodologies used in acoustical imaging. It covers a multitude of applications such as medical diagnostics, nondestructive testing, underwater imaging, geophysical exploration, as well as others, and includes derivations of the mathematics particular to those fields. It also includes the acoustics as applied to metamaterials and finally concludes with a discussion on future directions and technologies.

In covering the broad range of subjects within one text of modest size, the author condenses the discussion of mathematical derivations and signal processing techniques and in doing so somewhat limits the understanding to those readers who have a sophisticated background and advanced expertise in mathematics and mathematical techniques. Practicing engineers and scientists in the field may feel at a loss in understanding and comprehension of the subject material due to the utilization of a sophisticated treatment of mathematics without inclusion of sufficiently detailed background. The derivations and their explanations are simply too condensed. This is perhaps a somewhat understandable procedure considering the broad range of subject coverage, coupled with the possible intention of keeping the text of modest length.

As may be assumed in any first edition, there are typographical and grammatical errors, but most do not significantly compromise the understanding of the material.

Despite the above limitations, nevertheless, the book does provide an initial reference to serve as a resource for those interested in exploring the usefulness of a particular acoustics-based technique in the pursuit of their own research and/or development endeavors. Certainly the broad range of coverage provides an insight into the diversity of applications which can and do utilize acoustical imaging techniques.

Michael W. Ferralli
Gannon University
Erie, PA, 16514, USA
ferralli001@gannon.edu