

BOOK REVIEW

MULTIPLE SCATTERING: INTERACTION OF TIME-HARMONIC WAVES WITH N OBSTACLES

P. A. Martin

Encyclopedia of Mathematics and its Applications,
vol. 107, Cambridge University Press
Cambridge, U.K., 2006

Multiple scattering, the scattering of time-harmonic waves by obstacles, is a universal and important phenomenon in science and engineering. This book written by the mathematician P.A. Martin, of the Colorado School of Mines, is the first book that concentrates on multiple scattering. The book covers the essential theories and tools dealing with multiple scattering. These include the addition theorem, separation of variables, integral equations, the null-field and T-matrix, and approximation methods.

The mathematics describing the techniques above is made accessible by this book to both graduate students and practitioners in science and engineering. All four major physical areas: acoustics, electromagnetics, elastodynamics and hydrodynamics are treated; acoustics, especially, is treated in greater detail. This is beneficial not only to readers from different areas where they can read about their own special topics of interest, but also it offers a better understanding of the connection between different areas so as to provide more physical insight.

It is quite helpful that the book contains a comprehensive bibliography, combined with the author's nice literature reviews. Throughout the book, Martin's presentation is clear and concise, and the material is organized quite well. One minor quibble is that some page numbers in the subject index are not correct. For example, the page number for "honest method" should be 322, not 326.

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