Introduction to the Theory of Sound Transmission With Application to the Ocean

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Published 1958

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Preface

It has been my intention in this book to give an introduction to the theory of sound transmission. One might consider any acoustic problem as consisting of some sort of source, transmission, and reception. The transmission itself is, of course, an important and integral part of the whole; this is the portion which is covered here. The level of the book is commensurate with that of a senior undergraduate-first-year graduate course. I have attempted to give the theory in such a manner and to such a degree that following this a reader might feel at ease with the published literature in the field. My specific applications of the theory have been to a description of sound transmission in the ocean. Wherever possible I have given the physical explanations of the theoretical results; this I feel is an important part of a thorough understanding of the theory.

I hope that the book may be of interest to those engaged in various aspects of acoustics and geophysics and particularly to those who are entering into or desire to become acquainted with this subject.

The mathematics involved in the various derivations have been carried through in some detail. For those problems involving the evaluation of integrals, the integrals have been reduced to a familiar form or to a convenient tabulated form. On the other hand, no theory or proof of the various mathematical concepts that are used, such as Fourier integrals, is given. On this account the reader may wish to refer to or study an appropriate mathematics text from time to time.

References to the pertinent books and journal articles are covered in a particular chapter are given at the end of the chapter. Specific reference within each chapter has been avoided. Of the more recent theoretical developments, however, special mention should be given to C. L. Pekeris for the normal-mode type of solution. Only general mention is given to experimental work. This has been intentional.

I should like to express by thanks to the Rice Institute and the Woods Hole Oceanographic Institution for their generous policy of allowing an individual to follow the pursuits of his interest and to the Office of Naval Research and the Bureau of Ships, U. S. Navy,

who have encouraged and supported in a number of ways the preparation of this book. I should also like to acknowledge the discussions that I have had at various times with Drs. J. B. Hersey, and A. D. Voorhis and Mr. A. C. Vine, Woods Hole Oceanographic Institution; Profs. M. Ewing, J. Nafe, and J. L. Worzel and Messrs. J. I. Ewing and G. H. Sutton, Lamont Geological Observatory, Columbia University; Prof. F. Press, Seismological Laboratory, California Institute of Technology, Drs. R. Frosch, and I. Tolstoy, Hudson Laboratories, Columbia University; and Dr. E. T. Miller, Houston Research Center, Humble Oil CO., on matters pertinent to this book. Messrs D. G. Harkrider, T. W. Lawhorn, and D. E. Miller, graduate students at the Rice Institute, have critically examined portions of the material covered in this book.

Charles B. Officer

Author of The great dinosaur extinction controversy, A fabulous kingdom, Introduction to theoretical geophysics, Introduction to the theory of sound transmission, Tales of the earth, When the planet rages.Â Are you sure you want to remove Charles B. Officer from your list? Links (outside Open Library). No links yet. Add one? History. Created April 1, 2008. 2 revisions. While the energy was transmitted along the raypath SP at group velocity, the wavefront that represents a constant phase actually traveled from position A to B along TP normal to the wavefront at phase velocity. Because the group velocity is associated with the raypath, it is sometimes referred to as the ray velocity. Similarly, because the phase velocity is associated with the wavefront, it is sometimes referred to as the wavefront velocity.Â â†‘ 5.0 5.1 Officer, 1958, Officer, C. B., 1958, Introduction to the theory of sound transmission with application to the ocean: McGraw-Hill Book Co. â†‘ Uren et al., 1990b, Uren, N. F., Gardner, G. H. F. and McDonald, J. A., 1990b, Dip moveout in anisotropic media: Geophysics, 55, 863â€“867. Skip to main content. Search the history of over 371 billion web pages on the Internet. search Search the Wayback Machine. Featured. texts All Texts latest This Just In Smithsonian Libraries FEDLINK (US) Genealogy Lincoln Collection Additional Collections. Books to Borrow. Top. American Libraries Canadian Libraries Universal Library Community Texts Project Gutenberg Biodiversity Heritage Library Children's Library. Open Library.