Introduction to Seismology

By Peter M. Shearer

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This book provides an approachable and concise introduction to seismic theory, designed as a first course for undergraduate students. It clearly explains the fundamental concepts, emphasizing intuitive understanding over lengthy derivations. Incorporating over 30% new material, this second edition includes all the topics needed for a one-semester course in seismology. Additional material has been added throughout including numerical methods, 3-D ray tracing, earthquake location, attenuation, normal modes, and receiver functions. The chapter on earthquakes and source theory has been extensively revised and enlarged, and now includes details on non-double-couple sources, earthquake scaling, radiated energy, and finite slip inversions. Each chapter includes worked problems and detailed exercises that give students the opportunity to apply the techniques they have learned to compute results of interest and to illustrate the Earth's seismic properties. Computer subroutines and datasets for use in the exercises are available at www.cambridge.org/shearer.

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'... a concise and practical survey text that does a fine job of covering the basics ... it is ideally suited for an intermediate to advanced undergraduate class ...' Seismological Research Letters

'Shearer has a knack for clear explanations and for making otherwise difficult concepts easy to understand.' EOS

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'... an excellent introduction for non-seismologists to grasp concepts behind seismological techniques.' Episodes

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'As a textbook for a relatively advanced undergraduate course, this new edition of Shearer's volume continues to have few peers. ...it introduces the science of seismology in a clear, logical and concise manner." - The Leading Edge

"...the book is written so well that it can be expected to remain a basic Seismology text over the next decade." Pure and Applied Geophysics

About the Author
Peter M. Shearer is a Professor of Geophysics at the Scripps Institution of Oceanography, University of California, San Diego. He has written over one hundred scientific papers on various aspects of seismology and is currently the President-Elect of the seismology section of the American Geophysical Union. He has taught the introductory seismology class at Scripps for over 15 years; this book is based on material and problem sets that were developed for this class.

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