



Wave Motion in Elastic Solids (Dover Books on Physics)

By Karl F. Graff

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This highly useful textbook presents comprehensive intermediate-level coverage of nearly all major topics of elastic wave propagation in solids. The subjects range from the elementary theory of waves and vibrations in strings to the three-dimensional theory of waves in thick plates. The book is designed not only for a wide audience of engineering students, but also as a general reference for workers in vibrations and acoustics.

Chapters 1–4 cover wave motion in the simple structural shapes, namely strings, longitudinal rod motion, beams and membranes, plates and (cylindrical) shells. Chapters 5–8 deal with wave propagation as governed by the three-dimensional equations of elasticity and cover waves in infinite media, waves in half-space, scattering and diffraction, and waves in thick rods, plates, and shells.

To make the book as self-contained as possible, three appendices offer introductory material on elasticity equations, integral transforms and experimental methods in stress waves. In addition, the author has presented fairly complete development of a number of topics in the mechanics and mathematics of the subject, such as simple transform solutions, orthogonality conditions, approximate theories of plates and asymptotic methods.

Throughout, emphasis has been placed on showing results, drawn from both theoretical and experimental studies, as well as theoretical development of the subject. Moreover, there are over 100 problems distributed throughout the text to help students grasp the material. The result is an excellent resource for both undergraduate and graduate courses and an authoritative reference and review for research workers and professionals.

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