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By B. A. Auld



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Volume One begins with a systematic development of basic concepts (strain, stress, stiffness and compliance, viscous clamping) and coordinate transformations in both tensor and matrix notation. The basic elastic field equations are then written in a form analogous to Maxwell's equations. This analogy is then pursued when analyzing wave propagation in both isotropic and anisotropic solids. Piezoelectricity and bulk wave transducers are treated in the final chapter. Appendixes list slowness diagrams and material properties for various crystalline solids. Volume Two applies the material developed in Volume One to a variety of boundary value problems (reflection and refraction at plane surfaces, composite media, waveguides, and resonators). Pursuing the electromagnetic analogue, analytic techniques commonly used in electromagnetism (for example, normal mode emissions), are applied to elastic problems. Two final chapters treat perturbation and variational methods. An appendix lists properties of Rayleigh surface waves on single crystal substrates.



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