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Sinopsis

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This well-known text uses a limited number of basic concepts and techniques _ Hamilton's principle, the theory of the first variation and Bernoulli's separation method _ to develop complete solutions to linear boundary value problems associated with second order partial differential equations such as the problems of the vibrating string, the vibrating membrane, and heat conduction. It is directed to advanced undergraduate and beginning graduate students in mathematics, applied mathematics, physics, and engineering who have completed a course in advanced calculus.

In the first three chapters, Professor Sagan introduces Hamilton's principle and the theory of the first variation; he then discusses the representation of the vibrating string, the vibrating membrane and heat conduction (without convection) by partial differential equations. Bernoulli's separation method and infinite series solutions of homogeneous boundary value problems are introduced as a means for solving these problems.

The next three chapters take up Fourier series, self-adjoint boundary value problems, Legendre polynomials, and Bessel functions. The concluding three chapters address the characterization of eigenvalues by a variational principle; spherical harmonics, and the solution of the Schroedinger equation for the hydrogen atom; and the nonhomogeneous boundary value problem. Professor Sagan concludes most sections of this excellent text with selected problems (solutions provided for even-numbered problems) to reinforce the reader's grasp of the theories and techniques presented. - See more at: http://store.doverpublications.com/0486661326.html#sthash.RzYxwAQB.dpuf