Oscillations in Nonlinear Systems (Paperback)

By J. K. Hale

Dover Publications Inc., United States, 2015. Paperback. Book Condition: New. New edition. 213 x 137 mm. Language: English . Brand New Book. By focusing on ordinary differential equations that contain a small parameter, this concise graduate-level introduction to the theory of nonlinear oscillations provides a unified approach to obtaining periodic solutions to nonautonomous and autonomous differential equations. It also indicates key relationships with other related procedures and probes the consequences of the methods of averaging and integral manifolds. Part I of the text features introductory material, including discussions of matrices, linear systems of differential equations, and stability of solutions of nonlinear systems. Part II offers extensive treatment of periodic solutions, including the general theory for periodic solutions based on the work of Cesari-Halel-Gambill, with specific examples and applications of the theory. Part III covers various aspects of almost periodic solutions, including methods of averaging and the existence of integral manifolds. An indispensable resource for engineers and mathematicians with knowledge of elementary differential equations and matrices, this text is illuminated by numerous clear examples.

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