Chaos in Partial Differential Equations

By Y. Charles Li

International Press of Boston Inc. Paperback. Book Condition: new. BRAND NEW, Chaos in Partial Differential Equations, Y. Charles Li, Chaos in Partial Differential Equations is at its fast developing stage. The present book presents an overall survey on the existing results from the recent development. Nonlinear wave equations are the most important class of partial differential equations in natural sciences. Among these nonlinear wave equations, there is a class of equations called soliton equations which describes a wide spectrum of natural phenomenon. Recently, the author and his collaborators have established a systematic theory on chaos in nonlinear wave equations: a standard program for proving the existence of chaos in perturbed soliton equations, with the machineries: 1. Darboux transformations for soliton equations, 2. isospectral theory for soliton equations under periodic boundary condition, 3. persistence of invariant manifolds and Fenichel fibers, 4. Melnikov analysis, 5. Smale horseshoes and symbolic dynamics, and 6. shadowing lemma and symbolic dynamics. This monograph will be of interest to researchers in mathematics, physics, engineering, chemistry, biology and science in general, and particularly valuable to researchers interested in chaos in high dimensions. The book can be used as a textbook for advanced graduate courses, while the author tries...

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