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Nota di contenuto	1 S. Amat, S. Busquier, A. A. Magrenan and L. Orcos: An overview on Steffensen-type methods -- 2 Ioannis K. Argyros and Daniel Gonzalez: Newton’s Method for Convex Optimization -- 3 I. K. Argyros and Á. A. Magreñán: Inexact Newton methods on Riemannian Manifolds -- 4 Alicia Cordero and Juan R. Torregrosa: On the design of optimal iterative methods for solving nonlinear equations -- 5 J. A. Ezquerro and M. A. Hernandez-Veron: The theory of Kantorovich for Newton's method: conditions on the second derivative -- 6 J.-C. Yakoubsohn, J. M. Gutiérrez and Á. A. Magreñán: Complexity of an homotopy method

at the neighbourhood of a zero -- 7 M. A. Hernandez-Veron and N. Romero: A qualitative analysis of a family of Newton-like iterative process with R-order of convergence at least three -- 8 J. M. Gutierrez, L. J. Hernandez, Á. A. Magreñán and M. T. Rivas: Measures of the basins of attracting n-cycles for the relaxed Newton's method -- 9 Miquel Grau-Sanchez and Miquel Noguera: On convergence and efficiency in the resolution of systems of nonlinear equations from a local analysis.

Sommario/riassunto

This book focuses on the approximation of nonlinear equations using iterative methods. Nine contributions are presented on the construction and analysis of these methods, the coverage encompassing convergence, efficiency, robustness, dynamics, and applications. Many problems are stated in the form of nonlinear equations, using mathematical modeling. In particular, a wide range of problems in Applied Mathematics and in Engineering can be solved by finding the solutions to these equations. The book reveals the importance of studying convergence aspects in iterative methods and shows that selection of the most efficient and robust iterative method for a given problem is crucial to guaranteeing a good approximation. A number of sample criteria for selecting the optimal method are presented, including those regarding the order of convergence, the computational cost, and the stability, including the dynamics. This book will appeal to researchers whose field of interest is related to nonlinear problems and equations, and their approximation. .