

# MULTIPOINT METHODS FOR SOLVING NONLINEAR EQUATIONS

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Multipoint iterative methods belong to the class of the most efficient methods for solving nonlinear equations of the form  $f(x) = 0$ . Interest in multipoint methods has grown for two principal reasons. The first is that root solvers based on multipoint methods overcome theoretical limits of one-point methods related to the convergence order and computational efficiency. Secondly, with the significant progress and developments made in computer hardware and software (multi-precision arithmetic and symbolic computation), implementation and convergence analysis of multipoint methods with the capability to generate root approximations of very high accuracy have become possible.

This book offers the reader both a systematic introduction to techniques for developing multipoint methods and a unified presentation of the multipoint iterative methods constructed during the last fifty years. The results presented in the book mainly reflect the research conducted over the past decade, and are devoted to multipoint methods that attain maximal order of convergence with a fixed number of function evaluations.

Intended as a combination of theoretical results, algorithmic aspects and symbolic computation, *Multipoint Methods for Solving Nonlinear Equations* serves as a text for students in math and applied math courses. It is also a reliable, well-structured professional reference for numerical analysts, engineers, physicists and computer scientists.

**Miodrag S. Petković** is a professor of mathematics at the University of Niš, Serbia. Professor Petković has published over 250 research papers and some twenty books in the area of numerical analysis, interval mathematics and recreational mathematics, including three monographs on iterative root-solvers and interval analysis. He has been a visiting professor and researcher at universities in the USA, Japan and Europe. He serves as an associate editor and as an editorial board member for several journals in the field of applied and computational mathematics.

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**Ljiljana D. Petković** is a professor of mathematics at the University of Niš, Serbia. She has published more than 90 research papers in the area of numerical and interval analysis. Professor Petković has been a visiting professor and researcher at universities in Europe and Japan. She has coauthored seven books, including a monograph on interval mathematics.

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