ON NUMEROV SCHEME FOR NONLINEAR TWO-POINTS BOUNDARY VALUE PROBLEM

摘要
关键词

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Abstract Nonlinear Jacobi iteration and nonlinear Gauss-Seidel iteration are proposed to solve the famous Numerov finite difference scheme for nonlinear two-points boundary value problem. The concept of supersolutions and subsolutions for nonlinear algebraic systems are introduced. By taking such solutions as initial values, the above two iterations provide monotone sequences, which tend to the solutions of Numerov scheme at geometric convergence rates. The global existence and uniqueness of solution of Numerov scheme are discussed also. The numerical results show the advantages of these two iterations.

Key words   Nonlinear two-points boundary value problem   New iterations for Nomerov scheme Monotone approximations.

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