Argyros, I. K.; Hilout, S.
On the local convergence of fast two-step Newton-like methods for solving nonlinear equations. (English) Zbl 1262.65061

Summary: A local convergence analysis is presented for a fast two-step Newton-like method (TSNLM) for solving nonlinear equations in a Banach space setting. The TSNLM unifies earlier methods such as Newton’s, Secant, Newton-like, Chebyshev-Secant, Chebyshev-Newton, Steffensen, Stirling’s and other single or multistep methods. Numerical examples and a comparative study of these methods validating our theoretical results are also given in the concluding section of this paper.

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Banach space; semilocal convergence; Newton-like method; Chebyshev’s method; Secant method; Newton’s method

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