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An improvement of the Euler-Chebyshev iterative method. (English) Zbl 1113.65048

The computation of a simple root of a sufficiently smooth scalar function \( f \) is discussed. The Newton method and the Euler-Chebyshev method are briefly presented. A method based on the Euler-Chebyshev method using a linear combination of function values of \( f \) with a convergence order of 5 is constructed. For the practical test of 13 functions, a Maple-algorithm with iteration depending arithmetic is used.

Reviewer: René Lamour (Berlin)

MSC:
65H05    Numerical computation of solutions to single equations
65Y20    Complexity and performance of numerical algorithms

Keywords:
Euler-Chebyshev’s formula; nonlinear equation; iterative methods; order of convergence; computational efficiency; numerical examples; Newton method; Maple algorithm

Software:
Maple

Full Text: DOI

References:

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