

Pintér, J.

Solving nonlinear equation systems via global partition and search: Some experimental results. (English) Zbl 0689.65031
Computing 43, No. 4, 309-323 (1990).

The paper refers to a global optimization algorithm described by the author himself [Optimization 17, 187-202 (1986; Zbl 0595.90071)] which is a multivariate extension of the Danilin-Piyavskij-Shubert algorithm [cf. *Yu. M. Danilin and S. A. Piyavskij*, Theory of Optimal Solutions (Seminar, Kiev, 1967), No. 2, 25-37 (1967) and *B. O. Shubert*, SIAM J. Numer. Anal. 9, 379-388 (1972; Zbl 0251.65052)]. In order to solve a system of nonlinear equations, $F(x) = 0$, it is transformed into a global optimization problem, $\min f(x)$, where $f(x) = \|F(x)\|$ with an appropriate norm $\| \cdot \|$, such that the algorithm can be applied.

The paper's aim is to report about numerical tests performed with the algorithm. Two classes of problems are considered, i.e. trigonometric systems of equations and Shekel-type systems of equations where the coefficients involved were generated randomly.

Reviewer: [H.Ratschek](#)

MSC:

65H10 Numerical computation of solutions to systems of equations
65K05 Numerical mathematical programming methods
90C30 Nonlinear programming

Cited in **3** Documents

Keywords:

global optimization algorithm; Danilin-Piyavskij-Shubert algorithm; numerical tests; trigonometric systems; Shekel-type systems

Full Text: [DOI](#)

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