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**Monotonie und Einschließung beim Brown-Verfahren.** (German) [Zbl 0613.65051](#)  
Fakultät für Mathematik der Universität Karlsruhe (TH). 92 S. (1986).

The method of *K. M. Brown* [SIAM J. Numer. Anal. 6, 560-569 (1969; [Zbl 0245.65023](#))] is a particularly effective method for solving the equation (1)  $F(x) = 0$ , where  $F : D \subseteq \mathbb{R}^n \rightarrow \mathbb{R}^n$ . It is shown that Brown's method produces a monotonically decreasing sequence of iterates if  $F$  is order convex and  $F'(x)$  has a certain  $M$ -matrix structure. In many cases one then can obtain enclosures for a zero of (1) at a very low additional computational cost. These results are valid for the usual derivative free Brown's method as well as for the analytic Brown's method, for multi-stage and for block modifications.

**MSC:**

[65H10](#) Numerical computation of solutions to systems of equations

Cited in **3** Documents

**Keywords:**

monotonicity; order convex;  $M$ -matrix structure; derivative free; multi-stage; block modifications