ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

15. Numerical Analysis and Scientific Computing

1991 MS Classification: 47, 65
Hernández, M. A., Rubio, M. J. and Ezquerro, J. A., Universidad de La Rioja, Spain

A semilocal convergence result for Secant-type methods under Hölder continuity conditions

From the Secant method, we construct a new one-parameter family of Newton-like methods in a Banach space.
A semilocal convergence result is obtained, where the first order divided difference of the nonlinear operator is Hölder continuous. For that, we use a technique based on a new system of recurrence relations [1] to obtain existence-uniqueness domains of solutions and a priori error bounds. These results are applied to solve a two-point boundary value problem.
[1] J. M. Gutiérrez and M. A. Hernández, New recurrence relations for Chebyshev method, *Appl. Math. Lett.* , **10 (2)** (1997), 63–65.