

McCartin, Brian J.

A model-trust region algorithm utilizing a quadratic interpolant. (English) Zbl 0931.65060
J. Comput. Appl. Math. 91, No. 2, 249-259 (1998).

This paper deals with a new procedure for solving unconstrained optimization problems arising for instance through minimization of the norm of the residual of a system of nonlinear equations. The author presents an improvement to the standard “double dogleg” version of this algorithm via replacement of its piecewise-linear approximant by a quadratic interpolant. This method is compared to the “double dogleg” strategy on a suite of standard test problems. These techniques are included in model-trust region algorithms.

Reviewer: [Yves Cherruault \(Paris\)](#)

MSC:

[65K05](#) Numerical mathematical programming methods
[90C30](#) Nonlinear programming
[90C55](#) Methods of successive quadratic programming type

Cited in **2** Documents

Keywords:

[numerical examples](#); [quadratic interpolation](#); [double dogleg strategy](#); [unconstrained optimization](#); [nonlinear equations](#); [model-trust region algorithms](#)

Software:

[minpack](#)

Full Text: [DOI](#)

References:

- [1] Dennis, J.E.; Schnabel, R.B., Numerical methods for unconstrained optimization and nonlinear equations, (1983), Prentice-Hall Englewood Cliffs, NJ · [Zbl 0579.65058](#)
- [2] Horn, R.A.; Johnson, C.R., Matrix analysis, (1990), Cambridge · [Zbl 0704.15002](#)
- [3] McCartin, B.J., A new model-trust region algorithm for systems of nonlinear equations, (), 172-186
- [4] McCartin, B.J.; Hobbs, R.H.; LaBarre, R.E.; Kirschner, P.E., Solution of the discrete semiconductor device equations, (), 411-416
- [5] Moré, J.J.; Garbow, B.S.; Hillstrome, K.E., Testing unconstrained optimization software, *ACM trans. math. software*, 7, 1, 17-41, (1981) · [Zbl 0454.65049](#)
- [6] Moré, J.J.; Sorenson, D.C., Newton’s method, (), 29-82 · [Zbl 0608.65037](#)
- [7] Uspensky, J.V., Theory of equations, (1948), McGraw-Hill New York · [Zbl 0005.11104](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.