

# A GENERALIZED QUASI-NEWTON EQUATION AND COMPUTATIONAL EXPERIENCE

收稿日期 2005-3-30 修回日期 2005-12-14 网络版发布日期 2006-9-5 接受日期

摘要

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# A GENERALIZED QUASI-NEWTON EQUATION AND COMPUTATIONAL EXPERIENCE

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**Abstract** The quasi-Newton equation has played a central role in the quasi-Newton methods for solving systems of nonlinear equations and/or unconstrained optimization problems. Instead, Pan suggested a new equation, and showed that it is of the second order while the traditional of the first order, in certain approximation sense \cite{panqn}. In this paper, we make a generalization of the two equations to include them as special cases. The generalized equation is analyzed, and new updates are derived from it. A DFP-like new update outperformed the traditional DFP update in computational experiments on a set of standard test problems.

**Key words** [System of nonlinear equations](#) [Unconstrained optimization](#) [Quasi-Newton equation](#) [Second-order Quasi-Newton equation](#) [Update formula](#).

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