Global Convergence of a Modified Three-Term Conjugate Gradient Algorithms

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Abstract : This paper deals with a new nonlinear modified three-term conjugate gradient algorithm for solving large-scale unstrained optimization problems. The search direction of the algorithms from this class has three terms and is computed as modifications of the classical conjugate gradient algorithms to satisfy both the descent and the conjugacy conditions. An example of three-term conjugate gradient algorithm from this class, as modifications of the classical and well known Hestenes and Stiefel or of the CG_DESCENT by Hager and Zhang conjugate gradient algorithms, satisfying both the descent and the conjugate gradient algorithm with Wolfe type line search is globally convergent. Preliminary numerical results show the proposed method is very promising. **Keywords :** unconstrained optimization, three-term conjugate gradient, sufficient descent property, line search

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