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A Comparative Study of Three New Conjugate Gradient Methods with Exact Line Search

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Abstract. Conjugate Gradient methods play an important role in solving unconstrained optimization, especially for large scale problems. In this paper, we compared the performance profile of the classical conjugate gradient coefficients *FR*, *PRP* with three new β_k . These three new β_k possess global convergence properties using the exact line search. Preliminary numerical results show that the three new β_k are very promising and efficient when compared to CG coefficients *FR*, *PRP*.

Keywords: Conjugate gradient method, exact line search, global convergence, large scale, unconstrained optimization.

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