

## Convergence of symmetric rank-one method based on modified Quasi-Newton equation

### ABSTRACT

In this paper we investigate on convergence rate of a modified symmetric rank-one (SR1) method for unconstrained optimization problems. In general, the modified SR1 method incorporates a modified secant equation into the standard SR1 method. Also a restart procedure is applied to avoid the loss of positive definiteness and zero denominator. A remarkable feature of the modified SR1 method is that it possesses at most  $n+1$ -step  $q$ -superlinearly convergent and  $2n$ -step quadratic convergent without uniformly independent assumptions of steps.

**Keyword:** Unconstrained minimization; Convergence; Symmetric rank-one update; Secant equation; Hessian approximation