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Parameter estimation method of ARIMA model based on convex combination conjugate gradient. (Chinese. English summary) Zbl 07366847

Summary: In this paper, a convex combination conjugate gradient algorithm is proposed and the algorithm is applied to parameter estimation of ARIMA model. The new algorithm is constructed by convex combination of improved spectral conjugate gradient algorithm and conjugate gradient algorithm, and has the following characteristics: (1) the presented algorithm satisfies the conjugacy condition; (2) the algorithm possesses sufficient descent property. The algorithm with standard Wolfe line search has been proved to be completely convergent. Finally, numerical experiments indicate that the new algorithm is faster and more effective by adjusting convex combination parameters, and the significant fitting effect of the model is confirmed by specific examples.

MSC:
62F10 Point estimation
62M10 Time series, auto-correlation, regression, etc. in statistics (GARCH)

Keywords:
convex combination; conjugate gradient method; ARIMA model; complete convergence; parameter estimation