

## Convergence and stability of line search methods for unconstrained optimization.

### ABSTRACT

This paper explores the stability of general line search methods in the sense of Lyapunov, for minimizing a smooth nonlinear function. In particular we give sufficient conditions for a line search method to be globally asymptotically stable. Our analysis suggests that the proposed sufficient conditions for asymptotical stability is equivalent to the Zoutendijk-type conditions in conventional global convergence analysis.

**Keyword:** Global convergence; Globally asymptotical stability; Line search methods; Lyapunov stability; Unconstrained optimization.