

## Descent Algorithms for Optimization Algorithms Using q-Derivative

**Authors :** Geetanjali Panda, Suvrakanti Chakraborty

**Abstract :** In this paper, Newton-like descent methods are proposed for unconstrained optimization problems, which use q-derivatives of the gradient of an objective function. First, a local scheme is developed with alternative sufficient optimality condition, and then the method is extended to a global scheme. Moreover, a variant of practical Newton scheme is also developed introducing a real sequence. Global convergence of these schemes is proved under some mild conditions. Numerical experiments and graphical illustrations are provided. Finally, the performance profiles on a test set show that the proposed schemes are competitive to the existing first-order schemes for optimization problems.

**Keywords :** Descent algorithm, line search method, q calculus, Quasi Newton method

**Conference Title :** ICCAM 2017 : International Conference on Computational and Applied Mathematics

**Conference Location :** New York, United States

**Conference Dates :** June 04-05, 2017