

# AN INEXACT PROXIMAL REGULARIZATION METHOD FOR UNCONSTRAINED OPTIMIZATION

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We present an inexact proximal algorithm to solve a smooth unconstrained minimization problem. It is known that this kind of algorithm is suitable to solve a degenerate problem, when the Hessian is singular at a local optimal solution. The main feature of our algorithm is that it uses an outer/inner iteration scheme, in which an outer iteration is performed after the update of the regularization parameter, and is possibly followed by a sequence of minimization steps of the proximal function. We show that the algorithm has a strong global convergence property under mild assumptions. We also present an asymptotic analysis of the algorithm under the local error bound condition. Numerical experiments are reported.