

# ABSTRACT

Gilson do Nascimento Silva  
Orizon Pereira Ferreira

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**TITLE: Unifying the local convergence analysis of Newton's Method for strongly regular generalized equations**

**RESUME: In this work we consider Newton's method for solving the generalized equation in Banach spaces of the type  $0 \in f(x) + F(x)$ , where  $f$  is a differentiable function and  $F$  is a set-valued mapping with closed graph. We show under strong regularity of the generalized equation, concept introduced by S. M. Robinson, that this method is local quadratically convergent to a solution. The analysis presented based on Banach Perturbation Lemma for generalized equation and the majorant condition relaxing Lipschitz continuity of the derivative  $f'$ , allow to obtain the optimal convergence radius, uniqueness of solution and also unify some result pertaining the Newton's method theory.**