

T. Nikazad and M. Abbasi, A unified treatment of some perturbed fixed point iterative methods with an infinite pool of operators, *Inverse Problems*, Vol. 33 (2017), 044002. <https://doi.org/10.1088/1361-6420/33/4/044002>.

## Abstract

In this paper, we introduce a subclass of strictly quasi-nonexpansive operators which consists of well-known operators as paracontracting operators (e.g., strictly nonexpansive operators, metric projections, Newton and gradient operators), subgradient projections, a useful part of cutter operators, strictly relaxed cutter operators and locally strongly Féjer operators. The members of this subclass, which can be discontinuous, may be employed by fixed point iteration methods; in particular, iterative methods used in convex feasibility problems. The closedness of this subclass, with respect to composition and convex combination of operators, makes it useful and remarkable. Another advantage with members of this subclass is the possibility to adapt them to handle convex constraints. We give convergence result, under mild conditions, for a perturbation resilient iterative method which is based on an infinite pool of operators in this subclass. The perturbation resilient iterative methods are relevant and important for their possible use in the framework of the recently developed superiorization methodology for constrained minimization problems. To assess the convergence result, the class of operators and the assumed conditions, we illustrate some extensions of existence research works and some new results.