Topological Methods in Nonlinear Analysis Volume 50, No. 2, 2017, 513–530 DOI: 10.12775/TMNA.2017.014

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## CQ METHOD FOR APPROXIMATING FIXED POINTS OF NONEXPANSIVE SEMIGROUPS AND STRICTLY PSEUDO-CONTRACTIVE MAPPINGS

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ABSTRACT. We use the CQ method for approximating a common fixed point of a left amenable semigroup of nonexpansive mappings, an infinite family of strictly pseudo-contraction mappings and the set of solutions of variational inequalities for monotone, Lipschitz-continuous mappings in a real Hilbert space. Our results are a generalization of a result announced by Nadezhkina and Takahashi [N. Nadezhkina and W. Takahashi, Strong convergence theorem by a hybrid method for nonexpansive mappings and Lipschitz-continuous monotone mappings, SIAM J. Optim. 16 (2006), 1230–1241] and some other recent results.

## 1. Introduction

Let H be a real Hilbert space with inner product  $\langle \cdot, \cdot \rangle$  and induced norm  $\|\cdot\|$ . Let C be a nonempty closed convex subset of H. A mapping T of C into itself is called nonexpansive if  $\|Tx - Ty\| \le \|x - y\|$ , for all  $x, y \in C$ . By  $\operatorname{ne}(C)$ , we denote the set of all nonexpansive mappings of C into itself and by  $\operatorname{Fix}(T)$ , we denote the set of fixed points of T (i.e.  $\operatorname{Fix}(T) = \{x \in C : Tx = x\}$ ), it is well known that  $\operatorname{Fix}(T)$  is closed and convex. Let  $A: C \to H$  be a nonlinear

<sup>2010</sup> Mathematics Subject Classification. Primary: 47H09, 43A07; Secondary: 47A64, 65J15.

Key words and phrases. CQ method; amenable semigroup; pseudo-contraction mappings. This work is supported by the University of Bonab under Research Projection 94-I-ER-2868.