ERGODIC PROPERTIES OF A PARTICULAR AMENABLE SEMIGROUP OF MAPPINGS IN A BANACH SPACE

SHAHRAM SAEIDI

Department of Mathematics
University of Kurdistan
Sanandaj 416, Kurdistan, Iran.
E-mails: sh.saeidi@uok.ac.ir shahram_saeidi@yahoo.com

Abstract. We prove that if $S$ is an amenable semigroup and $\varphi = \{T_t : t \in S\}$ is a semigroup of mappings on a nonempty weakly compact, convex subset $C$ of a Banach space $E$, generated by $\{T_t : t \in A \subseteq S\}$, such that for each $t \in A$, $T_t$ is of type $(\gamma)$ and $D(\overline{\cap} F_1/n(T_t), F(T_t)) \rightarrow 0$, as $n \rightarrow \infty$, then $F(\varphi)$ of common fixed points of $\varphi$ is nonempty and there exists a retraction $P$ of type $(\gamma)$ from $C$ onto $F(\varphi)$, such that $PT_t = T_tP = P$ for each $t \in S$, and $Px \in \overline{\cap} \{T_t x : t \in S\}$ for each $x \in C$. The compactness of $C$ concludes such imposed conditions.

Key Words and Phrases: Amenable semigroup, common fixed point, mappings of type $(\gamma)$, nonexpansive mapping, nonlinear ergodic theorem, retraction.

2000 Mathematics Subject Classification: 47H09, 47H10, 47H20, 43A07.

References


Received: 21. 04. 2009; Accepted: 28. 01. 2009.