Fixed Point Theory, 13(2012), No. 1, 99-105
http://www.math.ubbcluj.ro/~nodeacj/sfptcj.html

EXISTENCE OF BEST PROXIMITY POINTS OF P-CYCLIC CONTRACTIONS

S. KARPAGAM AND SUSHAMA AGRAWAL

Ramanujan Institute for Advanced Study in Mathematics
University of Madras, Chennai, India
E-mails: karapagam.saravanan@gmail.com sushamamdu@gmail.com

Abstract. We consider a self map T on union of p subsets, $A_1, A_2, ..., A_p$, $(p \geq 2)$ of a metric space, which is a contraction under the condition $T(A_i) \subseteq A_{i+1}$, $1 \leq i \leq p$, $(A_{p+1} = A_1)$. We give sufficient conditions for the existence of a unique best proximity point of T, that is, a point $\xi \in A_i$, such that $d(\xi, T\xi) = dist(A_i, A_{i+1})$ and approximation of this point by a Picard type iterative method.
Key Words and Phrases: Best proximity point, uniformly convex Banach space, contraction.
2010 Mathematics Subject Classification: 54H25, 47H10.

Acknowledgement. Both the authors are thankful to Dr. A. Anthony Eldred, St. Joseph College, Trichy 620 001 (India) for the valuable discussions the authors had with him which were useful for the article.

References

[1] A.A. Eldred, P. Veeramani, *Existence and convergence of best proximity Points*, J. Math. Anal. Appl., **323**(2006), 1001-1006.
[2] M.A. Khamsi, W.A. Kirk, *An Introduction to Metric Spaces and Fixed Point Theory*, John Wiley and Sons, Inc, 2001.
[3] W.A. Kirk, P.S. Srinivasan, P. Veeramani, *Fixed points for mappings satisfying cyclical contractive conditions*, Fixed Point Theory, **4**(2003), 79-89.

Received: December 14, 2008; Accepted: September 29, 2010.