ITERATIVE APPROXIMATION OF SOLUTIONS OF GENERALIZED EQUATIONS OF HAMMERSTEIN TYPE

C.E. CHIDUME* AND Y. SHEHU**

*Mathematics Institute, African University of Science and Technology
Abuja, Nigeria
E-mail: cchidume@aust.edu.ng

**Department of Mathematics, University of Nigeria
Nsukka, Nigeria
E-mail: deltanougt2006@yahoo.com

Abstract. Let $H$ be a real Hilbert space. For each $i = 1, 2, \ldots, m$, let $F_i, K_i : H \rightarrow H$ be bounded and monotone mappings. Assume that the generalized Hammerstein equation $u + \sum_{i=1}^{m} K_i F_i u = 0$ has a solution in $H$. We construct a new explicit iterative sequence and prove strong convergence of the sequence to a solution of the generalized Hammerstein equation. Our iterative scheme in this paper seems far simpler than the iterative scheme used by Chidume and Ofoedu [C. E. Chidume, E. U. Ofoedu; Solution of nonlinear integral equations of Hammerstein type, Nonlinear Anal. 74 (2011), 4293-4299] and Chidume and Shehu [C. E. Chidume, Y. Shehu; Approximation of solutions of generalized equations of Hammerstein type, Comp. Math. Appl. 63 (2012), 966-974].

Key Words and Phrases: Monotone operators, equations of Hammerstein type, strong convergence, Hilbert spaces.

2010 Mathematics Subject Classification: 47H06, 47H09, 47J05, 47J25.

Acknowledgements. The authors would like to express their sincere thanks to the anonymous referee for his valuable suggestions and comments which improved the original version of the manuscript greatly.

REFERENCES

428 C.E. CHIDUME AND Y. SHEHU

Received: October 01, 2012; Accepted: November 02, 2012