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GENERALIZED I-NONEXPANSIVE MAPS AND INVARIANT APPROXIMATION RESULTS IN p-NORMED SPACES

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Abstract

We extend the concept of R-subcommuting maps due to Shahzad[17,18] to the case of non-starshaped domain and obtain a common fixed point result for this class of maps on non-starshaped domain in the setup of p-normed spaces. As applications, we establish noncommutative versions of various best approximation results for generalized I-nonexpansive maps on non-starshaped domain. Our results unify and extend that of Al-Thagafi, Dotson, Habiniak, Jungck and Sessa, Latif, Sahab, Khan and Sessa and Shahzad.

Key words common fixed point, contractive family of functions, R-subcommuting maps, invariant approximation.

AMS(2000) subject classification 47H10, 54H25

1 Introduction

In 1963, Meinardus[12] employed the Schauder fixed point theorem to prove a result regarding invariant approximation. Subrahmanyam[21] obtained the following generalization of Meinardus's result.

Theorem 1.1. Let T be a nonexpansive self-mapping of a normed space X , M be a finite dimensional T-invariant subspace of X and u F(T),the set of fixed points of T. Then