DOMINATED ORTHOGONALLY ADDITIVE OPERATORS IN LATTICE-NORMED SPACES

NARIMAN ABASOV\(^1\) and MARAT PLIEV\(^2\)

Communicated by P. Aiena

Abstract. In this paper, we introduce a new class of operators in lattice-normed spaces. We say that an orthogonally additive operator \(T\) from a lattice-normed space \((V,E)\) to a lattice-normed space \((W,F)\) is dominated, if there exists a positive orthogonally additive operator \(S\) from \(E\) to \(F\) such that \(|Tx| \leq S|x|\) for any element \(x\) of \((V,E)\). We show that under some mild conditions, a dominated orthogonally additive operator has an exact dominant and obtain formulas for calculating the exact dominant of a dominated orthogonally additive operator. In the last part of the paper we consider laterally-to-order continuous operators. We prove that a dominated orthogonally additive operator is laterally-to-order continuous if and only if the same is its exact dominant.

References


Copyright 2019 by the Tusi Mathematical Research Group.

Date: Received: Apr. 27, 2018; Accepted: Aug. 2, 2018.

*Corresponding author.

2010 Mathematics Subject Classification. Primary 47H30; Secondary 47H99.

Key words and phrases. Lattice-normed space, vector lattice, orthogonally additive operator, dominated \(\mathcal{P}\)-operator, exact dominant, laterally-to-order continuous operator.

1Department of Mathematics, MAI – Moscow Aviation Institute (National Research University), Moscow, 121552 Russia.

E-mail address: abasovn@mail.ru

2Laboratory of Functional Analysis, Southern Mathematical Institute of the Russian Academy of Sciences, Vladikavkaz 362027, Russia.

E-mail address: plimarat@yandex.ru