

ADMISSIBLE PERTURBATION OF SINGLE-VALUED OPERATORS IN VECTOR-VALUED METRIC SPACES*

Adrian Petruşel[†] Gabriela Petruşel[‡] Jen-Chih Yao[§]

Abstract

In this paper, using the admissible perturbation technique, we will prove some data dependence and stability results for the fixed point equation in complete vector-valued metric spaces. Our approach generalizes some recent results in metric fixed point theory.

Keywords: single-valued operator, fixed point, vector-valued metric, complete metric space, stability properties.

MSC: 47H10, 54H25.

DOI <https://doi.org/10.56082/annalsarscimath.2024.2.150>

1 Preliminary notions and results

Let (X, d) be a metric space and $P(X)$ be the set of all nonempty subsets of X . Let us recall now the following notions:

(1) the distance from a point $x \in X$ to a set $Y \in P(X)$:

$$D(x, Y) := \inf\{d(x, y) \mid y \in Y\}.$$

*Accepted for publication on May 17, 2024

[†]adrian.petrusel@ubbcluj.ro Babeş-Bolyai University Cluj-Napoca, Romania and Academy of Romanian Scientists, Bucharest, Romania

[‡]gabriela.petrusel@ubbcluj.ro Babeş-Bolyai University Cluj-Napoca, Romania

[§]yaojc@mail.cmu.edu.tw Center for General Education, China Medical University, Taichung, Taiwan and Academy of Romanian Scientists, Bucharest, Romania