



S -Metric Spaces and Fixed Point Theorems for Multivalued Contraction Mappings

Zouhir Idriss Bouker⁽¹⁾ and Taieb Hamaizia⁽²⁾

⁽¹⁾*Department of Mathematics and Informatics, OEB University, Algeria
email: bouker.zouhiridriss@univ-oeb.dz*

⁽²⁾*Department of Mathematics and Informatics, OEB University, Algeria
e-mail: tayeb042000@yahoo.fr*

Abstract

This paper extends a previous study by introducing and investigating a generalized contraction for multivalued mappings in the framework of complete S -metric spaces. Utilizing this new contraction condition, we establish several fixed point and common fixed point theorems. The obtained results generalize and unify a number of existing works in the literature, thereby contributing to the development of fixed point theory in generalized metric spaces.

Keywords: Fixed point theory, S -metric spaces, multivalued mappings.

References:

- [1] S. Banach, Sur les opérations dans les ensembles abstraits et leur application aux équations intégrales. *Fund. Math.* 3 (1922), 133–181.
- [2] M. Demma and P. Vetro, Picard sequence and fixed point results on b -metric spaces. *J. Funct. Spaces* 2015, Art. ID 189861, 6 pp.
- [3] F. Khojasteh, M. Abbas and S. Costache, Two new types of fixed point theorems in complete metric spaces. *Abst. Appl. Anal.* 2014, Art. ID 325840, 5 pp.
- [4] J. Nadler, Multi-valued contraction mappings. *Pacific J. Math.* 30 (1969), 475–488.
- [5] A. Pourgholam and M. Sabbaghan, S_H -metric spaces and fixed point theorems for multivalued weak contraction mappings. *Mathematical Sciences* 15 (2021), no. 4, 377–385.
- [6] A. Pourgholam, M. Sabbaghan and F. Taleghani, Common fixed points of single-valued and multi-valued mappings in S -metric spaces. *J. Indones. Math. Soc.* 28 (2022), no. 1, 19–30.
- [7] S. Sedghi, N. Shobe and A. Aliouche, A generalization of fixed point theorems in S -metric spaces. *Mat. Vesnik* 64 (2012), no. 3, 258–266.