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ALTERING POINTS IN PARTIAL METRIC SPACES

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Abstract. This paper elaborates on a composition of two set-valued mappings in partial metric spaces. We establish several fixed point theorems, which generalize and complement some already known results. Especially, even in a partial metric space, our main result is an extension of the fixed point theorems of Abdessalem Benterki.

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1. Introduction

Fixed point theory is an object of active research with wide range of applications in various fields. It includes results which state that under certain conditions a self map f on a set X admits one or more fixed points, i.e., there exists a point $x \in X$ such that $f(x) = x$. A theorem concerning the existence and uniqueness of a fixed point in a complete metric space was formulated and proved in 1922 by the Polish mathematician Stefan Banach. His result is now known as the Banach's fixed point theorem or the *Banach contraction principle*. In 1969, by using the term Hausdorff metric, Nadler introduced the notion of a set-valued contraction and proved a set-valued version of the Banach contraction principle. Since then many mathematicians have worked tirelessly in this area and a number of generalizations of *Nadler's contraction principle* have appeared.

Partial metric spaces were introduced quite recently in 1992 by Matthews as a generalization of the notion of a metric space in which the distance of a point from itself is not necessarily zero. Since then many papers on fixed point theorems for set-valued mappings on partial metric spaces have appeared (see, e.g., [1, 8, 9, 13] and references cited therein). The purpose of this paper is to prove the existence