COMMON FIXED POINTS FOR
ψ-CONTRACTIONS ON
PARTIAL METRIC SPACES

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Abstract

We prove some generalized versions of an interesting result of Matthews
using conditions of different type in 0-complete partial metric spaces.
We give, also, a homotopy result for operators on partial metric spaces.

Keywords: Points of coincidence, common fixed points, 0-complete partial metric
space, ψ-contractions.


1. Introduction

In the setting of domain theory, attempts were made in order to equip semantics
domain with a notion of distance. In particular, Matthews [8] introduced the notion of a
partial metric space as a part of the study of denotational semantics of data for networks,
showing that the contraction mapping principle of Banach [2] can be generalized to the
partial metric context for applications in program verification. Moreover, the existence
of several connections between partial metrics and topological aspects of domain theory
have been lately pointed by other authors as O’Neill [9], Bukatin and Scott [3], Bukatin
and Shorina [4], Romaguera and Schellekens [13] and others.

After the definition of the concept of partial metric space, Matthews [8] obtained a
Banach type fixed point theorem on complete partial metric spaces. In this paper to prove
some generalized versions of the result of Matthews, we use conditions of different type
in 0-complete partial metric spaces. In section 4, using our results, we give a homotopy
result for operators on partial metric spaces.

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