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# I-favorable spaces: revisited

by

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# I-FAVORABLE SPACES: REVISITED

VESKO VALOV

ABSTRACT. The aim of this paper is to extend the external characterization of I-favorable spaces obtained in [13]. This allows us to obtain a characterization of compact I-favorable spaces in terms of quasi $\kappa$-metrics. We also provide proofs of some author's results announced in [14].

## 1. Introduction

The aim of this paper is to extend the external characterization of I-favorable spaces obtained in [13]. We also provide proofs of some author's results announced in [14]. All topological spaces are Tychonoff and the single-valued maps are continuous.

P. Daniels, K. Kunen and H. Zhou [2] introduced the so called *open-open game*: Two players take countably many turns, a round consists of player I choosing a non-empty open set $U \subset X$ and II choosing a non-empty open set $V \subset U$. Player I wins if the union of II's open sets is dense in $X$, otherwise II wins. A space $X$ is called I-*favorable* if player I has a winning strategy. This means, see [6], there exists a function $\sigma : \bigcup_{n\geq 0} \mathcal{T}_X^n \to \mathcal{T}_X$ such that the union $\bigcup_{n\geq 0} U_n$ is dense in $X$ for each game

$$\big(\sigma(\varnothing), U_0, \sigma(U_0), U_1, \sigma(U_0, U_1), U_2, ..., U_n, \sigma(U_0, U_1, .., U_n), U_{n+1}, , , \big),$$

where all $U_k$ and $\sigma(\varnothing)$ are non-empty open sets in $X$, $U_0 \subset \sigma(\varnothing)$ and $U_{k+1} \subset \sigma(U_0, U_1, .., U_k)$ for every $k \geq 0$ (here $\mathcal{T}_X$ is the topology of $X$).

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