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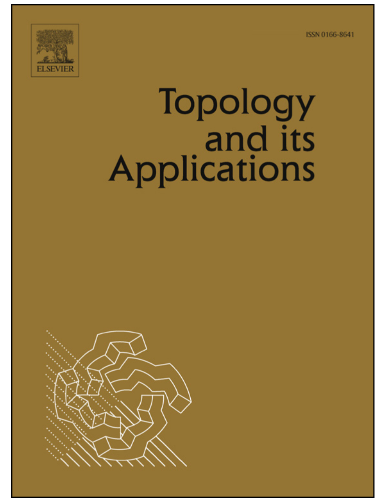

Induced mappings on symmetric products, some answers

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Induced mappings on symmetric products, some answers

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Abstract

Given a continuum X, let $F_n(X)$ denote the hyperspace of nonempty subsets of X with at most n points. For $n \geq 2$, let $SF_n(X) = F_n(X)/F_1(X)$ be the quotient space. Given a mapping between continua $f : X \to Y$, we consider the induced mappings $f_n : F_n(X) \to F_n(Y)$ and $Sf_n : SF_n(X) \to SF_n(Y)$. Given a class of mappings $\mathcal{M}$, in this paper we consider relations between the statements $f \in \mathcal{M}$, $f_n \in \mathcal{M}$ and $Sf_n \in \mathcal{M}$, and we answer some questions about these relations considering the following classes of mappings: almost monotone, atriodic, freely decomposable and joining.

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1. Introduction

A *continuum* is a nonempty compact connected metric space with more than one point. A *mapping* is a continuous function.

Given a continuum X, the n^{th}-*symmetric product* of X is defined as

$$F_n(X) = \{A \subset X : A \text{ is nonempty and has at most } n \text{ points}\}.$$

This hyperspace is metrized with the Hausdorff metric H.

If $n \geq 2$, the n^{th}-*symmetric product suspension* of X is defined as the quotient space

$$SF_n(X) = F_n(X)/F_1(X).$$

This space is considered with the quotient topology, we consider the quotient mapping $q_X^n : F_n(X) \to F_n(X)/F_1(X)$, and we denote by F_X^n the unique point in $q_X^n(F_1(X))$.

Given a surjective mapping between continua $f : X \to Y$, we consider the *induced mappings* $f_n : F_n(X) \to F_n(Y)$ and $Sf_n : SF_n(X) \to SF_n(Y)$ given by $f_n(A) = f(A)$ (the image of A under f) and given $B \in SF_n(X)$ we take an