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Induced mappings on hyperspaces $F_n^K(X)$

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Abstract: Given a metric continuum X and a positive integer n, $F_n(X)$ denotes the hyperspace of all nonempty subsets of X with at most n points endowed with the Hausdorff metric. For $K \in F_n(X)$, $F_n(K,X)$ denotes the set of elements of $F_n(X)$ containing K and $F_n^K(X)$ denotes the quotient space obtained from $F_n(X)$ by shrinking $F_n(K,X)$ to one point set. Given a map $f\colon X \to Y$ between continua, $f_n\colon F_n(X) \to F_n(Y)$ denotes the induced map defined by $f_n(A) = f(A)$. Let $K \in F_n(X)$, we shall consider the induced map in the natural way $f_{n,K}\colon F_n^K(X) \to F_n^{f(K)}(Y)$. In this paper we consider the maps f, f_n, $f_{n,K}$ for some $K \in F_n(X)$ and $f_{n,K}$ for each $K \in F_n(X)$; and we study relationship between them for the following classes of maps: homeomorphisms, monotone, confluent, light and open maps.

Keywords: continuum; symmetric product; quotient space; hyperspace; induced mapping
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