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CATEGORIES DEFINED BY INITIALITY AND FINALITY IN *Top*

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We consider two subcategories $\mathscr{A}$ and $\mathscr{B}$ of *Top* and define initially defined topological spaces from $\mathscr{A}$ to $\mathscr{B}$, namely a topological space X is said to be initially defined from $\mathscr{A}$ to $\mathscr{B}$ if the space X^0 endowed with the initial structure for $\{f \mid f : X \to A$ continuous and $A \in \mathscr{A}\}$ belongs to $\mathscr{B}$.

We define Ini $(\mathscr{A} : \mathscr{B})$ as the full subcategory formed by initially defined spaces from $\mathscr{A}$ to $\mathscr{B}$.

Firstly, we give internal characterizations and their categorical properties for various categories $\mathscr{A}$ and $\mathscr{B}$.

Secondly, we try to get some permanence properities of Ini $(\mathscr{A} : \mathscr{B})$. For a subcategory $\mathscr{B}$ such that for any $(X, \mathscr{T}) \in \mathscr{B}$, the space $(X, \mathscr{T}')$ with $\mathscr{T} \subseteq \mathscr{T}'$ belongs to $\mathscr{B}$, it is shown that if $\mathscr{B}$ is closed under the formation of products, then so is Ini $(\mathscr{A} : \mathscr{B})$, and that if $\mathscr{B}$ is hereditary, then so Is Ini $(\mathscr{A} : \mathscr{B})$.

It is also shown that if $\mathscr{B}$ is closed under the formation of continuous images then Ini $(\mathscr{A} : \mathscr{B})$ is also closed under the formation of continuous images.

Finally, we try to dualize the above concepts in chapter Ⅲ and we obtain some corresponding results.

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