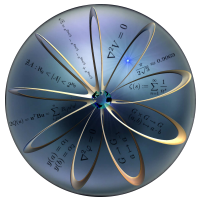

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initial source

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Let **A** be a concrete category over **X**. A source $(A \xrightarrow{f_i} A_i)_{i\in I}$ in **A** is called *initial* provided that an **X**-morphism $f : |B| \to |A|$ is an **A**-morphism whenever each composite $f_i \circ f : |B| \to |A_i|$ is an **A**-morphism.

The dual notion is called a *final sink*.

A source $(A, f_i)_I$ in the category of topological spaces **Top** is initial if and only if A has the initial topology with respect to the family $(f_i)_I$.

A topological space X is completely regular if and only if the source $S(X, \mathbb{R})$, consisting of all continuous maps from X to the real line, is initial (in the construct **Top**); and X is a Tychonoff space if and only if $S(X, \mathbb{R})$ is an initial mono-source.

A similar characterization holds for epireflective subcategories of **Top**.

References

[1] J. Adámek, H. Herrlich, and G. Strecker. *Abstract and Concrete Categories*. Wiley, New York, 1990.