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by

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Abstract. A function $f : (X, d_X) \to (Y, d_Y)$ is called Cauchy continuous iff for each Cauchy sequence $\{x_n\}$ in X, $\{f(x_n)\}$ is a Cauchy sequence in Y. In this article we consider the reverse implication: i.e. whenever $\{y_n\}$ is a Cauchy sequence in Y, there is a Cauchy sequence $\{x_n\}$ in X with each $x_n \in f^{-1}(y_n)$, call such a function a Cauchy covering map, and study related properties. Cauchy covering maps can be viewed also as a generalization of so called sequence covering maps. We also give an almost necessary and sufficient condition for a metric space to be complete in terms of Cauchy covering maps. We further study some generalizations of Cauchy continuous maps.

1. Introduction

In this paper we consider the class of spaces that are continuous images of metric spaces. The study of this class has been well studied over the past 50 years. In 1971, Swiec[13, 14] introduced the concept of sequence covering maps which is closely related to the question about compact covering and s-images of metric spaces. In [9], Lin discussed about sequence covering maps and its properties, also solved many open problems related to this concept.

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