

REPRESENTING HOMOTOPY CLASSES BY MAPS WITH CERTAIN MINIMALITY ROOT PROPERTIES II

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ABSTRACT. The purpose of this work is to represent homotopy classes of maps from a surface M to $S^2 \vee S^1$ by maps with some minimal root properties.

1. Introduction

We denote by $[X, Y]$ the set of homotopy classes of continuous maps $f: X \rightarrow Y$ and by $[f]$ the homotopy class of f .

Given $y \in Y$, if the root set $f^{-1}(y) = \{x \in X : f(x) = y\} \neq \emptyset$, then any of its elements is called a root of f in y . The root problem studies conditions for finding $g \in [f]$ such that $g^{-1}(y)$ is empty or minimal. In our case the root sets are finite or the union of a finite number of circles and minimal means that such number should be as small as possible.

In [2] and [1] this problem was studied when X and Y are manifolds. In this work we focus on the case X is a surface and $Y = S^2 \vee S^1$.

The case $X = S^2$ was treated in [4], here we consider other surfaces.

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