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OPEN DIAMETER MAPS ON SUSPENSIONS

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Abstract. It is shown that if X is a metric continuum, which admits an open diameter map, then the suspension of X, admits an open diameter map. As a corollary, we have that all spheres admit open diameter maps.

1. Introduction

A diameter map is a continuous function from the hyperspace of non-empty closed subsets of a compact metric space into the non-negative reals that assigns to each closed set of the space the diameter of the set. The properties of the diameter map strongly depend on the metric. In [3], Nadler asked if there exists a metric for the circle that admits an open diameter map. He also asked to characterize the spaces that admit open diameter maps. In [2, Theorem 5.5], it is shown, among other things, that the suspension of a finite discrete space admits an open diameter map. Since a circle is the suspension of a two-point set, this shows that a circle admits open diameter mappings. Continuing on this topic, it is shown in [1] that any finite connected graph admits an open diameter map. In [2, Problem 5.10], it is asked if a suspension of any compact metric space (continuum) admits an open diameter map and, in particular, if n-dimensional spheres admit open diameter maps. In this note, the authors use a modified version of the metric in [2, Theorem 5.5] to show that if X is a continuum, which admits an open diameter map,

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