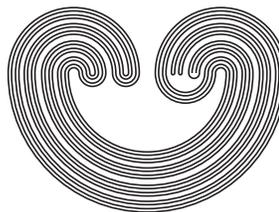


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ON BELLAMY'S SET FUNCTION Γ

by

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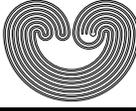
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ON BELLAMY'S SET FUNCTION Γ

SERGIO MACÍAS

ABSTRACT. David P. Bellamy defined a set function Γ in his paper *Some topics in modern continua theory* [Continua, Decompositions, Manifolds, Austin, TX: University of Texas Press, 1983, 1–26]. We investigate this set function and prove his conjecture.

1. INTRODUCTION

David P. Bellamy defined a set function Γ in [1, p. 11]. He mentions that he has not done a serious study of this set function and he conjectures that [1, Theorem 1] is true for Γ . We show in Theorem 3.30 that this is the case.

The paper is divided in five sections. We provide definitions in section 2. In section 3, we present properties of Γ . For example, in Theorem 3.3, we characterize compacta for which $\Gamma(\emptyset) = \emptyset$. In particular, for a continuum, we have that $\Gamma(\emptyset) = \emptyset$ (see Corollary 3.4). We also characterize continua X such that $\Gamma(A) = A$ for all closed subsets A of X (see Theorem 3.20). In section 4, we consider the symmetry, additivity, and idempotency of Γ . For a continuum X , we characterize the additivity of Γ in terms of families of closed subsets of X whose union is closed in X (see Theorem 4.5). We also prove, in Theorem 4.17, that Γ is not idempotent on the product of an indecomposable continuum and a continuum. In section 5, we study properties of Γ when its restriction to the hyperspace of nonempty closed subsets is continuous. We show in Theorem 5.1 that

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