CONTINUOUS COLLECTIONS OF CONTINUOUS CURVES

BY R. D. ANDERSON

The purpose of this paper is to establish that there exists a continuous collection G of mutually exclusive compact non-degenerate continuous curves filling up a one-dimensional compact continuum such that G with respect to its elements as points is homeomorphic to the compact Hilbert cube. The existence of such a collection can be demonstrated by a modification of the argument in [1]. In this paper we shall make some new definitions on the basis of which the argument of [1] implies the existence of a continuous collection of mutually exclusive continua as in [1]. We shall show that each element of the new collection so defined is locally connected.

If X is a collection of point sets, X^* will denote the sum of the elements of X. If Y is a point set, $B(Y)$ will denote the boundary of Y.

An *E-set* is a finite collection E of 3-cells such that if two elements of E intersect, the intersection is a 2-cell, no three elements of E have a point in common, and E^* is connected. Each of the elements of E is said to be a *link* of the E-set.

The E-set is to be regarded as used in place of the simple chain of [1]. Other definitions and statements of [1] are to be thought of as modified accordingly.

An *n-p-set* is a continuum M which is the sum of the links of $(n + 1)$ mutually exclusive E-sets $e_1, e_2, \cdots, e_{n+1}$ and mutually exclusive connecting links of these E-sets in pairs such that each connecting link intersects exactly two links of the various E-sets and for each pair of E-sets e_i and e_j there is at least one of these connecting links intersecting a link of e_i and a link of e_j. The E-sets are called *vertex elements* of the n-p-set. It is understood that with each n-p-set is associated a unique set of vertex elements and connecting links. A subset of M which consists of the sum of the links of $(k + 1)$ vertex elements of M and all connecting links of these vertex elements in pairs is called a *k-p-subset* of M and with this subset are associated the contained vertex elements and connecting links of the n-p-set.

We refer to the links of the vertex elements and the connecting links of an n-p-set (or k-p-subset) as the *link sets* of the n-p-set (or k-p-subset).

The n-p-set is to be regarded as used in place of the n-q-set of [1]. Statements in [1] are to be thought of as modified accordingly.

If A is a link set and B is a link set of an n-p-set or of a k-p-subset of an n-p-set then A is said to be *adjacent* to B in such n-p-set or k-p-subset if A intersects B.

In lieu of the second sentence of the middle paragraph on page 363 of [1] we substitute "Let N_i' be an upper bound on the number of links in the various individual vertex elements of elements of F_{i-1} and let $N_i = N_i' + 1$."

Received May 20, 1953; presented to the American Mathematical Society April, 1953.