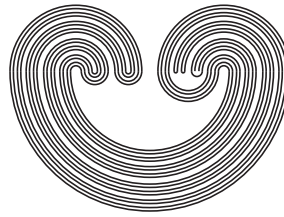


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## CLOSED SUBSETS OF EUCLIDEAN SPACES CONTAINED IN PSEUDO-ARCS

by

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## CLOSED SUBSETS OF EUCLIDEAN SPACES CONTAINED IN PSEUDO-ARCS

ALEJANDRO ILLANES

**ABSTRACT.** In this paper we prove that if  $K$  is a compact subset of the Euclidean space  $\mathbb{R}^k$  ( $k \geq 3$ ) with the property that every nondegenerate component of  $K$  is a pseudo-arc, then there exists a pseudo-arc  $P$  with  $K \subset P \subset \mathbb{R}^k$ .

### 1. INTRODUCTION

J. R. Kline and R. L. Moore proved [7] that, in the plane, a compact set  $M$  is a subset of an arc if and only if every component of  $M$  is either a one-point set or an arc  $\alpha$  such that no point of  $\alpha$ , except its end points, is a limit point of  $M - \alpha$ . In his dissertation, published in [3], H. Cook studied the corresponding problem for the pseudo-arc and proved that if  $K$  is a compact plane set, then there exists a pseudo-arc  $P$  with  $K \subset P \subset \mathbb{R}^2$  if and only if each of the nondegenerate components of  $K$  is a pseudo-arc. H. Cook has conjectured that this result is also true for  $\mathbb{R}^k$  if  $k \geq 3$ . This conjecture was stated in the paper by David P. Bellamy in [1].

In this paper we prove Cook's conjecture by showing that, if  $k \geq 3$  and  $K$  is a compact subset of the Euclidean space  $\mathbb{R}^k$ , then there exists a pseudo-arc  $P$  such that  $K \subset P \subset \mathbb{R}^k$  if and only if each nondegenerate component of  $K$  is a pseudo-arc.

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