

On the uniqueness of the decomposition of manifolds, polyhedra and continua into cartesian products

Witold Rosicki
Gdansk University, Poland

Abstract. Generally the uniqueness of the decomposition of topological spaces into Cartesian product does not hold. We have very simple examples. The Cartesian product of a disc with two holes and an interval and the Cartesian product of a torus with one hole and an interval are homeomorphic.

However, the uniqueness of the decomposition holds in some cases. In 1938 K.Borsuk showed that the decomposition of a polyhedron into Cartesian product of 1-dimensional factors is unique.

I will consider the uniqueness of the Cartesian products of 2-polyhedra and present some positive results. In the world of continua such uniqueness results cannot be obtained.

Together with S.Kwasik we considered the Cartesian products of 3-manifolds and n -spheres. If n is even, then the product is unique, if n is odd it is not.