

Seminario de Geometría y Topología



Characterization of n -dimensional compacta in the product of n curves

Akira Koyama
(Universidad de Waseda, Tokio, Japón)

Abstract: One of the important embedding theorems in dimension theory was given by J.Nagata (1958): *Every n -dimensional space, $n \geq 2$, can be embedded in the topological product $X_1 \times \dots \times X_{n+1}$ of 1-dimensional spaces.* On the contrary Borsuk(1975) showed the following interesting result. *The 2-sphere S^2 is not embeddable in any product of two curves. Analogous result holds for all spheres S^n , $n \geq 3$.*

Motivated by these results, we investigated geometric, algebraic and combinatorial characterizations of n -dimensional compacta in the product of n 1-dimensional compacta. For example, we introduced a kind of generalized manifolds, called quasi n -manifolds, and showed that *if a locally connected quasi n -manifold X is in a product of n curves, then $\text{rank } \check{H}^1(X) \geq n$.* This implies the above Borsuk's theorem.

Another generalization is the following: *if a compactum X is in a product of n curves and $\check{H}^n(X; G) \neq 0$ for some abelian group G , then $\check{H}^1(X; G) \neq 0$.*

We shall talk about results, topics and questions related to this embedding theorems.

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Facultad de Ciencias Matemáticas
Departamento de Geometría y Topología, Sala 225
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