

Toposym 4-B

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Embedding compacta up to shape

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EMBEDDING COMPACTA UP TO SHAPE

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This is the abstract of [1] in which we prove some results on embedding of metric compacta up to shape into Euclidean spaces. Namely, we find some sufficient conditions when a pointed compactum X of the shape dimension $Sd(X, x)$ can be embedded up to shape into E^q for $q < 2Sd(X, x) + 1$, where embedding of X into Y up to shape means that there is a subspace $X' \subset Y$ of the same shape as X . The main result is

Theorem 1. Let M be a PL manifold without boundary of dimension q and let $\{(P_k, x_k), P_{k,k+1}\}$ be a tower of polyhedra such that

(i) all P_k are of dimension $\leq n$, $q - n \geq 3$;

(ii) all bonding maps are $(2n - q + 1)$ -connected, and

(iii) there is a $(2n - q + 1)$ -connected map $p_{01} : P_1 \rightarrow M$.

Then there is a pointed compactum $Y \subset M$ such that $Sh(Y, y) =$

$= Sh \varprojlim \{(P_k, x_k), P_{k,k+1}\}$.

Using Theorem 1 and some other lemmas and stability theorems of D. A. Edwards and R. Geoghegan one gets

Theorem 2. If X is a pointed compactum, $Sd(X, x) = n$, which is r -shape connected, $n - r \geq 2$, then (X, x) can be embedded up to shape into E^{2n-r+1} .

Theorem 3. Let X be a pointed compactum which is pointed shape dominated by a polyhedron and let $Sd(X, x) = n \geq 3$. If (X, x) has trivial shape groups for $1 \leq i \leq r$, $n - r \geq 3$, then (X, x) can be embedded up to shape into E^{2n-r} .

Reference

- [1] I. Ivanšić: Embedding compacta up to shape. Submitted to Bull. Acad. Polon. Sci. Sér. Sci. Math. Astronom. Phys.