Ivan Ivanšić 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 compacts 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' < Y of the same shape as X. The main result is

<u>Theorem</u> 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) == $Sh \lim_{k \to \infty} \{(P_k, x_k), p_{k,k+1}\}$.

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

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

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

Reference

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