

New results on geometric topology of continua

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It is well-known that every n -dimensional compactum is weakly homotopy equivalent to an $(n+1)$ -dimensional cell-like compactum (i.e. a compactum with the trivial shape). Therefore there exist nonaspherical cell-like compacta in all dimensions ≥ 3 . It was heretofore unknown whether such compacta also exist in dimension 2. In this talk we shall present joint result with K. Eda and U.H. Karimov, namely the affirmative answer to this question: we have constructed *an example of a 2-dimensional nonaspherical cell-like compactum*. Namely, we have proved that the space $SC(S^1)$ which we have constructed in our earlier paper, is in fact, a *nonaspherical* cell-like 2-dimensional simply connected Peano continuum. We have also modified our original construction of the space $SC(S^1)$ and showed that the modified construction gives a space which has the homotopy type of the classical well-known space from the 1950's, which is a non-simply connected one point union of two contractible spaces

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