Calculation of Homotopy Groups of Finite Complexes Using Finite Space Approximation

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In the middle of XIX century the concept of homotopy group of topological space was formulated. It became one of the most important concepts in homotopy topology and now it is fundamental characteristic of topological spaces. Nowadays calculating the homotopy groups of different spaces is difficult and in most cases remains an unsolved problem; even for such simple spaces as spheres problem of their homotopy groups wasn't studied in detail. In this research I suggest new and elementary method to compute homotopy class sets of finite complexes maps. This gives a solution to a more general problem, since homotopy groups are the special case of homotopy classes sets. This method reduces the problem of homotopy groups calculation to combinatorial problem. The main theorem says that any set of homotopy classes of maps of finite CW-complexes N and M could be calculated as a direct limit of sets of homotopy classes of maps of finite models of N and finite topology space, created by contracting interiors of cells of complex M.