

summary of work:
Mappings of dense subsets of the plane
and of Hilbert's cube

In the first part of the thesis the following theorem has been proved: for any two countable and dense subsets A, B of the Hilbert cube Q there exists an automorphism of Q that transforms A onto B and preserves the infinite dimensional Lebesgue measure. This part is published in the article *Measure-preserving countable dense homogeneity of the Hilbert cube*, *Topology and its Applications*, 160 (2013), 257-263.

In the second part of the thesis the following theorem is proved: if A and B are countable families of pairwise disjoint (within a family) subsets of the Euclidean plane whose closures are continua and whose diameters tend to zero and any two sets from the union of A and B are ambiently homeomorphic to each other via an orientation preserving automorphism of the plane, then there exists a automorphism of the plane that transforms the family A onto the family B (i.e. each set from A is transformed onto some set from B and each set from B is the image of some set from A). This part is in the article *A stronger form of countable dense homogeneity of the plane*, which is submitted for publication.