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The space of trinagulations of compact 4-manifolds

For a compact manifold M consider the space of all simplicial isomorphism classes of triangulations of M endowed with the metric defined as the minimal number of bistellar transformations required to transform one of a pair of considered triangulations into the other. Then there exist a constant $C > 1$ such that for every m and all sufficiently large N there exist more than C^N triangulations of M with at most N simplices such that pairwise distances between them are greater than $2^{2^{\cdot^{\cdot^{\cdot^{2^N}}}}}$ (m times).

This result follows from a similar result for the space of all balanced presentations of the trivial group. ("Balanced" means that the number of generators equals to the number of relations). This space is endowed with the metric defined as the minimal number of Tietze transformations between finite presentations.

I will be describing results from a joint work with Alex Nabutovsky.