

Monday, September 7, 2026, from 4:45 p.m. to 6:20 p.m. (Moscow time), room 16-10 and ZOOM translation

A.T. Fomenko, S.A. Galkin,
I.S. Kuznetsova, M.M. Mikhailov,
D.A. Tkachenko, E.D. Shadrina

Topological Wonders

Topology and geometry contain vivid, easy-to-state, and important themes that may at first seem unexpected and mysterious. We have provisionally called them “wonders.” In fact, they are grounded in deep mathematical facts and theories. Some of them will be briefly discussed in our talks. There will be twenty-four “wonders.” (Of course, we cannot cover every other mathematical wonder as well.) We will present only the statements and the essence of these “wonders,” without details or theorem proofs. If some of them arouse particular interest among the audience, a more detailed presentation can be organized later.

First talk (if we do not manage to cover all the topics, the remaining ones will be moved to the next session):

I.S. Kuznetsova, A.T. Fomenko.

- (1) Adams’ example of a stable soap film that retracts to the boundary.
- (2) Lusternik–Schnirelmann category and the Poincaré conjecture on three geodesics.
- (3) A locally homologically disconnected 2-complex with trivial 1-dimensional and 2-dimensional homologies.
- (4) Platonic solids and regular polytopes in higher dimensions.
- (5) Sabitov’s theorem on flexible polyhedra: a solution to the bellows problem.
- (6) AI solved one of Erdos’s problems on a lattice of points in the plane.

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- (7) p -adic solenoids.
- (8) Different versions of Cantor sets. Hausdorff dimension. It may be non-integer.
- (9) Antoine’s necklace.
- (10) Fractals.
- (11) On any smooth symplectic manifold M^{2n} there exists a complete commutative (involutive) set of n smooth functions. The question of the existence of polynomials (on an algebraic variety) is far more difficult. Mishchenko–Fomenko–Sadetov for Lie algebras.

SCIENTIFIC SEMINAR

“DIFFERENTIAL GEOMETRY AND APPLICATIONS”

headed by Academician of RAS Anatoly T. Fomenko

The zoom-ref is provided only to registered persons

To be registered, ask any participant of our seminar to endorse you
Announcements of previous talks can be found on the seminar website

<http://dfgm.math.msu.su/chairsem.php>