

An outstanding mathematician Sergei Ivanovich Adian passed away on May 5, 2020 in Moscow at the age of 89. He was the head of the Department of Mathematical Logic at Steklov Mathematical Institute of the Russian Academy of Sciences (since 1975) and Professor of the Department of Mathematical Logic and Theory of Algorithms at the Mathematics and Mechanics Faculty of Moscow M.V. Lomonosov State University (since 1965).

Sergei Adian is famous for his work in the area of computational problems in algebra and mathematical logic. Among his numerous contributions two major results stand out. The first one is the Adian—Rabin Theorem (1955) on algorithmic unrecognizability of a wide class of group-theoretic properties when the group is given by finitely many generators and relators. Natural properties covered by this theorem include those of a group being trivial, finite, periodic, and many others. A simpler proof of the same result was obtained by Michael Rabin in 1958.

Another seminal contribution of Sergei Adian is his solution, together with his teacher Petr Novikov, of the famous Burnside problem on periodic groups posed in 1902. The deluding simplicity of its formulation fascinated and attracted minds of mathematicians for decades. Is every finitely generated periodic group of a fixed exponent n necessarily finite? Novikov—Adian Theorem (1968) states that for sufficiently large odd numbers n this is not the case.

By a heroic effort, in 1968 Sergei Adian finished the solution of Burnside problem initiated by his teacher Novikov, having overcome in its course exceptional technical difficulties. Their proof was arguably one of the most difficult proofs in the whole history of Mathematics. Currently, the best known bound on the exponent n is 665 (from Adian's book of 1975). Adian himself actively worked for the last few years of his life on a significant improvement of this bound, however this work was never completed.

The methods by Novikov and Adian have subsequently led to solutions of several other outstanding problems in group theory. To name a few, Adian gave the first explicit examples of independent infinite series of group identities and developed new operations of periodic products of groups (solving a problem posed by Maltsev). Another application of these methods, in his joint work with Igor Lysenok, was the construction of infinite 2-generated groups whose proper subgroups are all finite cyclic of order dividing a fixed odd number $n \geq 1003$ (the so-called *Tarski monsters*). Such examples were constructed for the first time by Alexander Olshansky for much larger n .

By a different method, Sergei Adian and Alexander Razborov obtained a constructive proof of a well-known theorem of Alexei Kostrikin on the existence of a maximal finite periodic group of a given odd prime exponent p with a fixed number of generators. This allowed them to obtain the first primitive recursive upper bounds on the cardinality of such groups.

Sergei Adian served on the editorial board of several leading mathematical journals: *Russian Mathematical Surveys*, *Mathematical Notes*, *Izvestiya Mathematics*. He was an honorary editor of the *International Journal of Algebra and Computation* since its foundation in 1991.

Among his numerous honors are membership in the Russian Academy of Sciences (full membership since 2001), foreign membership in the National Academy of Sciences of Armenia (2008), Moscow Mathematical Society Prize (1956), Chebyshev Prize of the Russian Academy of Sciences (1963), Alexander von Humboldt Prize (1993), State Prize of the Russian Federation (1999), Order of Honor of Russian Federation (2011), gold medal *For an Outstanding Contribution to Mathematics* of the Sobolev Institute of Mathematics (2013).

He supervised many students including Gennady Makanin, Yuri Ozhigov, Nikolai Repin, Alexander Razborov, Igor Lysenok, Lev Beklemishev, Oleg Verbitsky, Alexei Talambutsa, Varujan Atabekyan (habilitation).

Throughout his life, Adian was actively involved in, and in many ways determined, the life of the mathematical logic community in Moscow and Russia. Several times his involvement was crucial for maintaining the high level at which mathematical logic is taught and represented in the university curriculum. He set an example by putting Mathematics above all other things in his life. His energetic nature, straightforwardness, and deep and passionate care about people around him will be long remembered by everyone who was blessed to have Sergei Ivanovich in his or her life.

Sergei Ivanovich Adian is survived by his son Ivan and two daughters, Vera and Lena. He will be deeply missed by his family and numerous students, friends, and colleagues.