

The Summer School

“Contemporary Mathematics”



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Since 2001, the Russian Academy of Sciences (mathematical section), the Steklov Mathematical Institute, the Moscow Department for Education and the Moscow Center for Continuous Mathematical Education organize a summer school, unique in its choice of professors and participants.

During two weeks around a hundred students (from the last two years of high-school or from the first two years of university) take part in 70-80 lectures and seminars. The classes are longer than ordinary school lessons, but shorter than university lectures: they take exactly 74 minutes each. Despite the fact that sometimes the weather is very hot, some students take part in 3-4 classes per day. The words “Contemporary Mathematics” in the title are not an exaggeration, which is confirmed by the programs of the previous schools.

Among the professors of the school are several of the leading mathematicians of the country, V. I. Arnold, D. V. Anosov, A. V. Arhangel'skij, A. A. Kirillov, S. P. Novikov, A. B. Sossinsky, V. M. Tikhomirov, A. G. Khovanskij, M. A. Tsfasman, V. A. Uspensky, V. A. Vassiliev and yesterday's and today's students, relatively recently having started their scientific path (A.Braverman, A.Bufetov, V.Kleptsyn, A.Kuznetsov). By the way, due to the total freedom of the participants to choose the courses, experienced mathematicians must sometimes face serious competition from their younger colleagues. The Organizing Committee often had to correct the schedule of the courses so as to give the participants (as well as the teachers) the opportunity to visit the courses of their choice.

The list of students is also outstanding. Many of them have gone through the toughest national and international competitions, others are invited by recommendations of leading teachers and scientific advisors.

The school remains in memory not only because of the mathematics, but because of the informal contacts of young elite of Russian mathematics between themselves and with older colleagues. Yesterday's olympiad winners and students will remember not only lectures and seminars, but talks on the beach, volleyball battles with the same lecturers (RAS member V.A.Vassiliev in 2001, professor A.V.Arkhangel'skij in 2002), football matches (where one could try to beat prof. A.B.Sossinsky or A.B.Skopenkov). They play tennis matches (academician A.A.Bolibrukh) and exciting ping-pong duels (prof. M.A.Tsfasman); some people believe that this is why



the professors are invited. Evenings, guitar accompanied singing can be heard in several locations around the school.

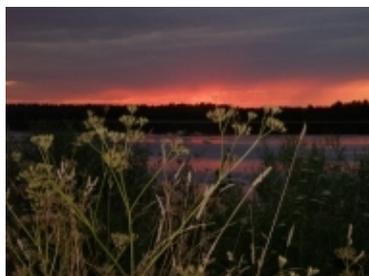
*We* would like to believe that the past schools were successful. At least, many professors did not want to leave (and sometimes changed their plans to stay a few more days), and participants replied to cautious questions of the questionnaire like “Weren’t there too many courses?”, that “We’d like to have more!”. What is even more interesting, to the question “Would you like to come next year”, instead of the typical “Sure!”, one of the answers was “Yes, if you’ll take me as a teacher”.

*A* series of brochures with the notes of courses of past schools have been published.

*We* hope that the Summer school “Contemporary Mathematics” will become international, and that in the summer of the next year the best math-loving scholars and students from different countries will have the possibility, as before, to spend two weeks in contact with the best mathematicians.

*In* 2007, the School for the first time accomodated foreign students. Their scientific program consisted partly of specially organized talks in English, and partly of the translated Russian lectures. You can find here the schedule and participants’ opinions.

*We* ask each student, who wants to participate, to fill in the questionnaire. You can see either Russian version of it, or the English version.



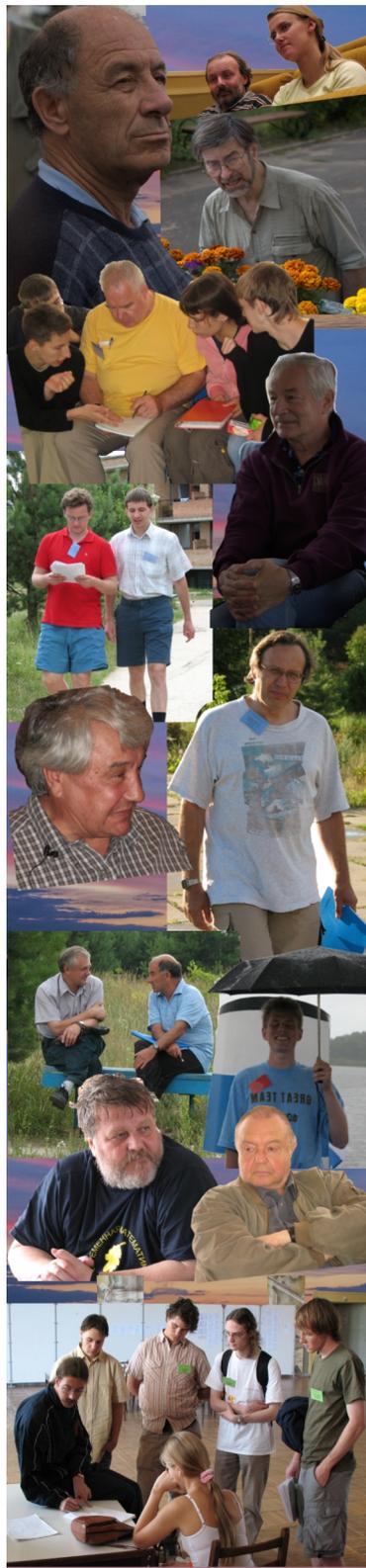
# Scientific program

## Lectures in English



Lecturer	Title
Yurii Burman	Cross-sections of the four-dimensional cube
George Shabat	Prime divisors of elements of come sequences
Ivan Arzhantsev	Closed and non-decomposable polynomials
Sabir Gusein-Zade	The problem of a picky bride
Vladimir Dotsenko	Enumeration of trees and residue invariance
Victor Kleptsyn	Sums of two squares
Alexander Bufetov	Fourier Transform
Arkadi Skopenkov	A simple definition of the Ricci curvature
Sergei Anisov	Paradoxes of voting and Arrow theorem
Alexey Sossinski	2-dimensional surfaces and configuration spaces of linkages
Gaiane Panina	On combinatorics of polytopes

### Lectures in Russian (with translation)



Lecturer	Title
Vladimir Uspensky	Four ways to the Godel Incompleteness Theorem
Vladimir Arnold	On the number of domains for arrangements of lines in the plane
Dmitry Anosov	Sharkovsky ordering
Nikolai Dolbilin	Minkovsky theorem on convex polytopes and its applications
Sergei Novikov	A new discrete model for complex analysis
Ivan Panin	Pythagorean triples
Alexander Kirillov	Geometry, analysis and arithmetic of fractals
Michel Balazard	Arithmetic progressions of prime numbers
Vladimir Tikhomirov	A brief course in mathematics
Sergei Anisov	Auctions
Ivan Yaschenko	Mathematics and cryptography
Alexander Razborov	Inverse problems of arithmetic combinatorics
Vladimir Arnold	Quadratic irrational numbers, their continued fractions and palindromes
Yuri Burman	Critical values of polynomials
Sabir Gusein-Zade	Is it possible to get lost in a forest?
Sergei Duzhin	Iterations of rational maps
Alexander Zilberman	Physical modelling, feedback connection and its practical applications.

## Participants opinions

I was amazed by the number of talented young Russian mathematicians when I arrived in Dubna. It was a pleasure to learn from some of the best Russian mathematicians. I feel Russian mathematics became much closer to me.

.....  
Roland Paulin (Hungary)

Thank you very much for letting us participate in this amazing event. It was been a unique experience to find so many like-minds people in one spot and an honour to be in same place as so many eminent mathematicians. The atmosphere was friendly, welcoming and accepting. I felt at home. All the extra-events, such as sport music and boat trip made this incredible 10 days.

Thank you again!

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Michail Eikenberg (Germany)

Very interesting subject and well-adjusted for international participants. And good free-time activiting.

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Knut Rand (Norway)

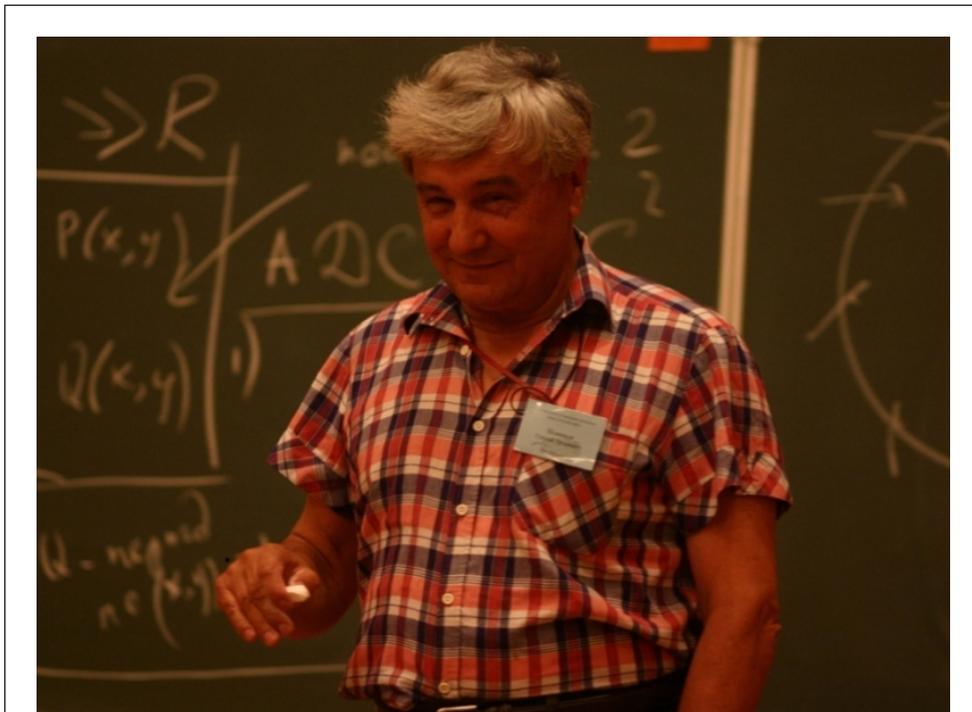
I liked the way mathematical ideas were represented instead of technical details.

.....  
Eemeli Blasten (Finland)

Photo gallery



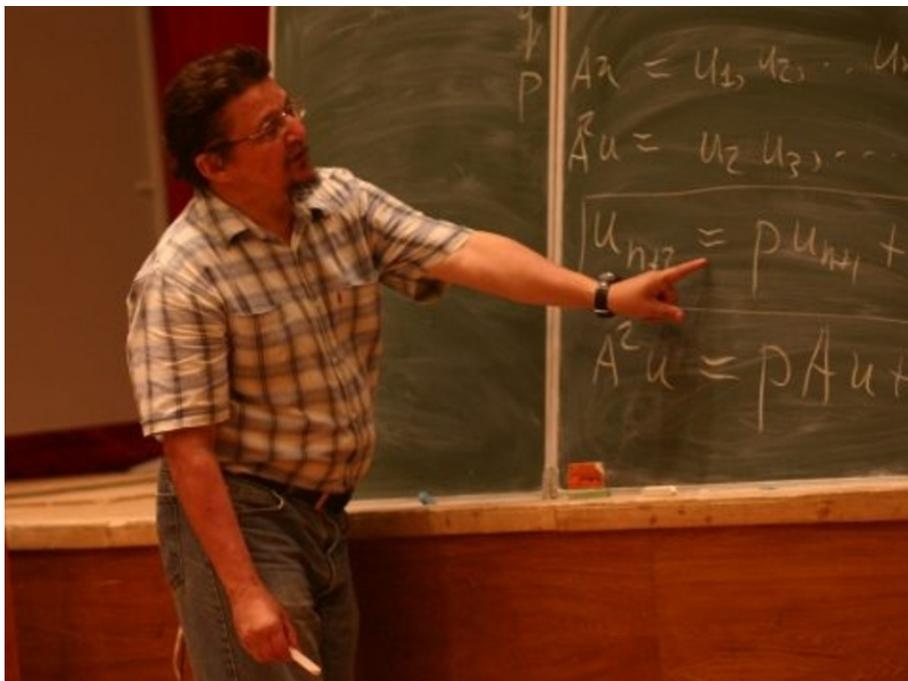
Vladimir Arnold



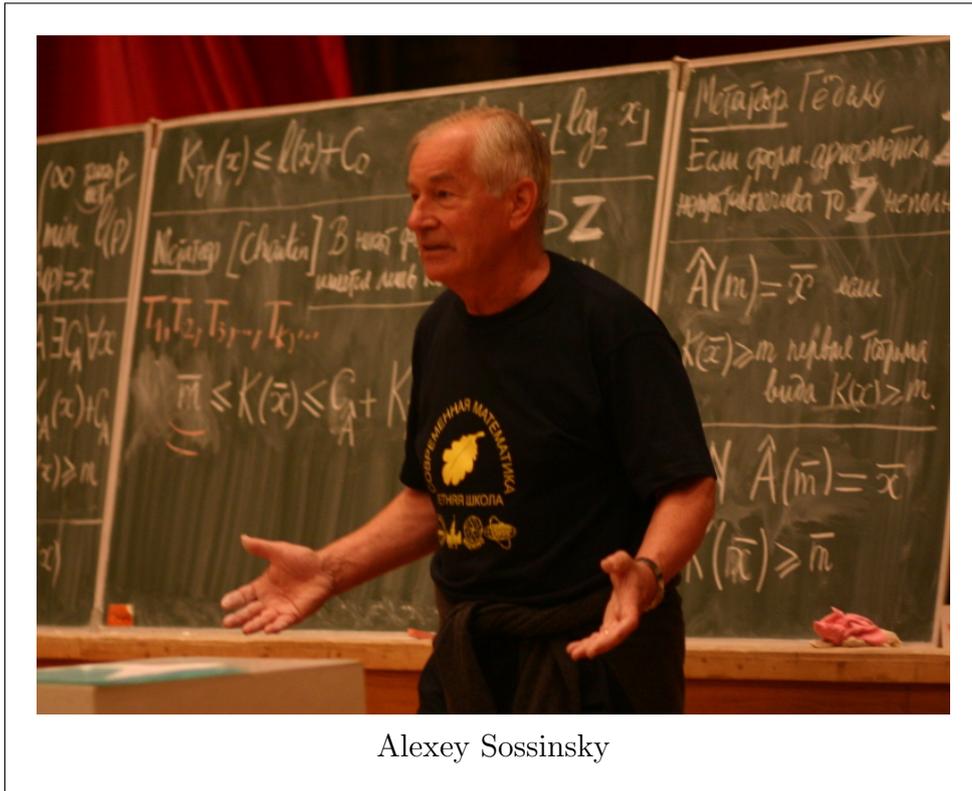
Sergey Novikov



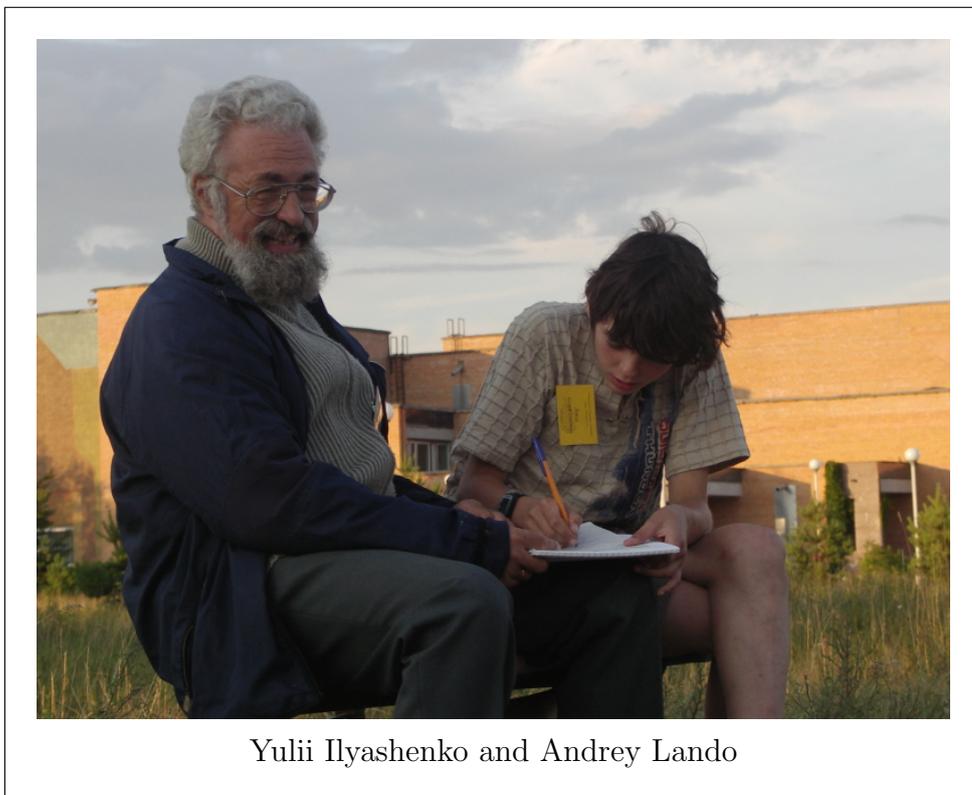
Vladimir Arnold and Natasha Goncharuk



Askol'd Hovansky



Alexey Sossinsky



Yulii Ilyashenko and Andrey Lando



Maxim Kazarjan and Anna Kondakova



Tatiana Golenishcheva - Kutuzova on the seminar

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