

Curriculum Vitae - 2008

ALEXANDER YU. OLSHANSKIY

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EDUCATION AND DEGREES: Undergraduate: Moscow State University (1963-1968) Graduate: Moscow State University (1968-1970) B.S. in Mathematics, 1968 Ph.D. in Mathematics, 1971 Doctor of Science in Mathematics (Habilitation), 1979

POSITIONS HELD: Assistant Professor of Mathematics, Moscow State University, 1970-1977 Associate Professor of Mathematics, Moscow State University, 1978-1984 Professor of Mathematics, Moscow State University, 1985-present, Centennial Professor of Mathematics, Vanderbilt University, 1999-present

AWARDS, GRANTS AND HONORS:

Moscow Mathematical Society Prize winner, 1970

Plenary speaker, International Congress of Mathematics, 1982

Kargapolov Prize "for outstanding contributions to group theory" at the 3rd International Algebra Conference, Krasnoyarsk, Russia, 1993

Honorary Badge, Seminar "Algebra and Logic," Novosibirsk

J. Miller Professorship, University of Illinois at Urbana Champaign, March-April 1995

Russian Federation Presidential Award 1993-1996

INTAS Award 1994-1998

Soros Professorship, 1995-96 and 1998

Russian Fund (awarded to outstanding research groups), 1996-1997

Russian Fund (for fundamental research), 1996-1998

INTAS grant 99-1224, 2000-2003

Malcev prize of the Russian Academy of Sciences for the series of papers in geometric and combinatorial group theory, 2000

Russian Fund for Fundamental Research, 1999-2001; grant 02-01-00170, 2002-2004; grant 05-01-00895, 2005-2007; grant 08-01-00573, 2008-2010.

NSF grant, DMS 0072307, 2000- 2003

NSF grant, DMS-0245600, 2003-2006

NSF Focus Research Grant, DMS-0455881, 2005-2008
NSF grant, DMS 0700811, 2007 - 2012, \$948,596, PI (with Mark Sapir)

EDITORIAL BOARDS:

Communications in Algebra
International Journal of Algebra and Computation
Journal of Group Theory
Algebra and Discrete Mathematics
Electronic Research Announcements in Mathematical Sciences

Ph.D. STUDENTS: A. N. Fedorov, T. V. Dubrovina, G. S. Derjabina, V. S. Atabekian, S. V. Ivanov, V. S. Guba, K. I. Lossov, V. N. Obrastsov, A.M. Storozhev, Nguen Hung Shon, V. G. Mikaelian, A. A. Klyachko, Yu. S. Semenov, K. V. Mikhajlovskii, A. Vdovina, G.Z. Arjantseva, N.V.Bezverhniy, D.V.Osin, P.A.Kozhevnikov, A. E. Pankratjev, Asoht Minasyan, Dmitry Sonkin, Alexey Muranov, Maria Milentyeva, O. V. Kulikova .

Currently A.Yu.Olshanskii advises 2 graduate students of the Vanderbilt.

PLENARY and INVITED 1-HOUR TALKS:

International Congress of Mathematics, 1982
At seven All-Union Algebra Conferences and five other All-Union Conferences (1969-1990)
Algebra Conference, Halle, 1986
International Conference "Groups-St Andrews-1989" (four lectures)
International Conference on Group Theory, Debrecen, 1990
Fifth Congress of Vietnamese Mathematicians, 1990
Workshop in Geometric and Combinatorial Methods in Group Theory, Edinburgh, 1993
Group Theory Conference, Spetses, Greece, 1993
Group Theory and Topology Workshop, Albany, NY, 1993
Geometrical and Homological Methods in Group Theory, Durham, UK, 1994
Third International Conference in Group Theory, Pusan, Korea, 1994
International Conference in Groups and Group Rings, Gliwice, Poland, 1994
Conference on Generators and Relations in Groups, Cortona, Italy, 1994
International Algebra Conference, Jerusalem, 1996
International Conference on Modern Algebra and its Applications, Nashville, USA, 1996

International Conference on Geometric and Combinatorial Group Theory, Canberra, Australia, 1996
 International Conference on Group Theory, Montreal, Canada, 1996
 International Algebra Conference, St. Petersburg, 1997
 International Algebra Conference, Hong Kong, 1997
 Malcev Algebra Conference, Novosibirsk, 1997
 International Conference "Groups-St Andrews-1997" (two lectures)
 Conference on Geometric Group Theory, Mobile, AL, 1998
 Conference on Combinatorial Methods in Algebra, Fayetteville, 1998
 International Conference on Algorithmic Problems in Groups and Semi-groups, Lincoln, USA, 1998
 International Conference in Group Theory, Pusan, Korea, 1998
 International Conference on Combinatorial and Computational Methods in Mathematics, Omsk, Russia, 1998
 Conference in Algebra, Moscow, 1999
 International Conference in Algebra, Hong Kong, 1999
 Wasatch Topology Conference, Park City, 1999
 International Conference in Logic and applications, Novosibirsk, 2000
 International Conference in Group Theory, Edmonton, 2000
 Groups, Rings, Lie and Hopf Algebras, St. John's (Canada), 2001
 Intern. Conf. in Algebra, Sumy (Ukraine), 2001 (2 lectures)
 Algebra and Discrete Math., Euroconference in Hattingen (Germany), 2001 (2 talks)
 Intern. Math. Conf., Kiev (Ukraine), June 2002
 Intern. Conf. "Algebra - Geometry and Interactions", Hattingen (Germany), July 2002
 Intern. Conf. in Algebra, Krasnoyarsk (Russia), August 2002
 Geometric Group Theory Conf., Pensacola (Florida), November 2002
 Intern. Conf. in Algebra and Number Theory, Tula (Russia), May 2003
 Conference in Combinatorics, Dynamics and Geometry of Groups, Gaeta (Italy), May-June 2003.
 4-th Ukrainian Algebraic Conference, Lviv (Ukraine), August 2003
 53-d Algebra Day in Ottawa (Canada), Sep.27, 2003
 Intern. Conf. in Algebra, Moscow (Russia), June, 2004
 Workshop on K-theory and the Geometry of Groups, Honolulu, Hawaii, Jan. 2005
 Conference in Groups and Group Rings, Bendlevo (Poland), June 2005
 Geometric and Probabilistic Methods in Group Theory, Geneva (Switzerland), June 2005
 5-th Ukrainian Conference in Algebra and Number Theory, July 2005

Asymptotic invariants and Geometric and Probabilistic Methods in Group Theory and Dynamical Systems, College Station (Texas), Nov. 2005

Group Theory, conference in Ischia (Italy), March-Apr. 2006;

Geometric and Combinatorial Group Theory, conference in Nashville, May 2006.

Conference in Group Theory, Nalchik (Russia), July 2006.

Workshop in Combinatorial Group Theory, Novosibirsk (Russia), August 2006.

Workshop in Group Theory, Kiev (Ukraine), Dec. 2006.

Conference in Algebra and Geometry, Erevan (Armenia), May 2007.

Conference "Algebraic Days in Antalya IX", Antalya (Turkey), May 2007.

2-d Congress in Algebra and Combinatorics, Beijing - Xi'an (China), July 2007.

International Conference "Algebra and its Applications", Krasnoyarsk (Russia), August 2007.

Conference in honor of Wilhelm Magnus, New York, Sep. 2007.

Workshop on Asymptotic Group Theory and Cryptography, Ottawa (Canada), Dec. 2007

Colloquium talk at the Mathematical Institute in Cuernavaca (Mexico), March 2008

Conference "Group Theory and Related Topics", Xuzhou (China), April 2008

Intern. Algebraic Kurosh Conference, Moscow (Russia), May-June, 2008

Workshop "Profinite and Asymptotic Group Theory" Oberwolfach, June, 2008

Conference and workshop in Group Theory, Chelyabinsk (Russia), Aug. 2008

COLLOQUIUM AND SEMINAR TALKS:

Over 200 colloquium and seminar talks has been given at various universities in the US, UK, Canada, China, Korea, Italy, Brazil, Australia, Germany, France, Singapore, Switzerland, Israel, Turkey, Mexico, Ukraine and Russia.

RESEARCH INTERESTS

Combinatorial Group Theory, Geometric Methods in Group Theory, Varieties of Groups and Rings and other areas.

PUBLICATIONS:

1. On the residual property of groups, Vestnik Mosk. Univ., Ser. Matem. (1968), N 2, 60-62, Russian (with K. K. Andreyev).
2. On a Hanna Neumann's problem, Matem. Sbornik (1968), N 3, 449-453 (in Russian).
3. Varieties of residually finite groups, Izvestia Akad. Nauk SSSR, Ser. Matem. (1969), N 4, 915-927 (in Russian).
4. On the problem of a finite basis of identities for groups, Izvestia Akad. Nauk SSSR, Ser. Matem. (1970), N 2, 376-384 (in Russian).
5. Two remarks on varieties of groups, Vestnik Mosk. Univ., Ser. Matem. (1971) N 2, 45-50 (in Russian).
6. Some questions of the theory of group varieties, Ph. D. thesis, Mosc. Univ., Dept. of Mechanics and Mathematics, 1971 (in Russian).
7. Solvable just-non-Cross varieties of groups, Matem. Sbornik (1971), N 5, 115-131 (in Russian).
8. On orders of relatively free groups of locally finite varieties, Izvestia Akad. Nauk SSSR, Ser. Matem. (1973), N1, 89-94 (in Russian).
9. On characteristic subgroups of free groups, Uspekhi Matem. Nauk (1974), N 1, 179-180 (in Russian).
10. Quasiidentities in finite groups, Sibirsk. Matem. J. (1974), 1409-1413 (in Russian).
11. Identical relations in finite Lie rings, Matem. Sbornik (1975), N 4, 543-559, in Russian (joint with Yu. A. Bakhturin).
12. On residual property and characteristic subalgebras of free Lie algebras, Trudy Sem. im. I.G.Petrovskogo (1976), N 2, 145-150, in Russian (with Yu. A. Bakhturin).
13. Solvable just-non-Cross varieties of Lie rings, Matem. Sbornik (1976), N 3, 384-399, in Russian (joint with Yu. A. Bakhturin).
14. To the questions on the number of generators and orders of abelian subgroups of finite p-groups, Matem. Zametki (1978), N3, 345-350 (in Russian).
15. On some infinite sets of identities, Trudy Sem. im. I. G. Petrovskogo (1978), N 3, 139-145 (in Russian).
16. Investigation of locally finite varieties of groups, Doctor of Sci. Thesis (1979), Moscow State Univ., Dept. of Mechanics and Mathematics (in Russian).
17. Infinite groups with cyclic subgroups, Doklady Akad. Nauk SSSR, 245 (1979), N 4, 785-787 (in Russian).

18. An infinite simple Noetherian torsion free group, *Izvestia Akad. Nauk SSSR, Ser. Matem.* (1979), N 6, 1328-1393 (in Russian).
19. On groups with cyclic subgroups, *Doklady Bulg. Akad. Nauk* 32 (1979), N 5, 1165-1166 (in Russian).
20. An infinite group with subgroups of prime orders, *Izvestia Akad. Nauk SSSR, Ser. Matem.*, 44 (1980), N 2, 309-321 (in Russian).
21. To the question on the existence of an invariant mean on a group, *Uspekhi Matem. Nauk* (1980), N 4, 199-200 (in Russian).
22. Remark on a countable non-topologized group, *Vestnik Mosk. Univ., Ser. Matem.* (1980), N 3, 103 (in Russian).
23. On Novikov - Adian's theorem, *Matem. Sbornik*, 118 (1982), n 2, 203-235 (in Russian).
24. Groups of a finite exponent with subgroups of a prime order, *Algebra and Logika* (1982), N 5, 553-618 (in Russian).
25. Practical work in algebra, *Moscow State Univ. Publ* (1983) 92 pages, in Russian (jointly with a team of authors).
26. Collection of exercises in algebra, Parts 1,2,3,4, *Moscow State Univ. Publ.* (1983, 1984, 1985, 1986), 148+184+104+72 pages, in Russian (jointly with a team of authors).
27. On a geometric method in combinatorial group theory, *Proc. Int. Congress Math.* 1(1983), 415-424.
28. On abelian and central extensions of aspherical groups, *Izvestia Vuzov, Matem.* (1985), N 11, 48-60, in Russian (with I. S. Ashmanov).
29. Varieties in which all finite groups are abelian, *Matem. Sbornik*, 126 (1985), N 1, 59-82 (in Russian).
30. Subgroups of quasifinite groups, *Uspekhi Matem. Nauk*, 41 (1986), N 6, 169-170, in Russian (joint with G. S. Deryabina).
31. The Neumanns - Shmel'kin's theorem, *Vestnik Mosk. Univ., Ser. Matem.*(1986), N 6, 61-64 (in Russian).
32. Collection of exercises in algebra, *Moscow, Nauka* (1987, 1995, 2001, 2006), 352 pages, in Russian (in a team of authors).
33. Identical relations, *Sovremen. problemy matem. Fundament. napravl.*, 117-240: in *Itogi Nauki i Tekhniki VINITI AN SSSR*, 18, Moscow, 1988, in Russian (with Yu. A. Bakhturin).
34. The Mal'tsev problem on operations on groups, *Trudy Sem. im. I. G. Petrovskogo*, 14 (1989), 225-249 (in Russian)
35. Geometry of defining relations in groups, *Moscow, Nauka*, 1989, 448 pages (in Russian).
36. Thrifty embeddings of countable groups, *Vestnik Mosk. Univ., Ser. Matem.* (1989), N 2, 28-34 (in Russian).

37. Infinite groups, *Sovremen. problemy matem., Fundament. napravl.*, 5-113; in *Itogi Nauki i Tekhniki VINITI AN SSSR*, 37, Moscow, 1989, in Russian (with A. L. Shmel'kin).
38. Diagrams of homomorphisms of surface groups, *Sibirsk. Matem. J.*, 30 (1989), N 6, 150-171 (in Russian).
39. Some applications of graded diagrams in combinatorial group theory, *London Math. Soc., Lecture Notes Ser.*, 160 (1990), 258-308 (with S. V. Ivanov).
40. Embedding of countable periodic groups into 2-generator simple periodic groups, *Ukrain. Matem. J.*, 43 (1991), N 7-8, 980-986 (in Russian).
41. Hyperbolicity of groups with subquadratic isoperimetric inequality, *Intern. J. of Algebra and Computation* 1 (1991), N 3, 281-289 .
42. Periodic quotients of hyperbolic groups, *Matem. Sbornik.*, 182 (1991), N 4, 543-567 (in Russian).
43. Almost every group is hyperbolic, *Internat J. of Algebra and Comput.*, 2 (1992), N 1, 1-17.
44. On two problems of H. Neumann about linked products of groups, *Bull. Austral. Math. Soc.*, 46 (1992), 2, 311-315 (joint with S. V. Ivanov).
45. Embedding of periodic groups into simple periodic groups, *Ukrain. Matem. J.*, 44 (1992), N 6, 845-847 (in Russian).
46. On residualizing homomorphisms and G -subgroups of hyperbolic groups, *Internat. J. of Algebra and Comput.*, 3 (1993), 1-44.
47. On calculation of width in free groups, *London Math. Soc., Lecture Notes Ser.*, 204 (1995), 255-258.
48. A simplification of Golod's example, *Proc. 3rd Int. Conf. in Group Theory (Korea, Pusan, 1994)*, Walter de Gruyter (1995), 263-265.
49. SQ-universality of hyperbolic groups, *Matem. Sbornik*, 186 (1995), N 8, 119-132 (in Russian).
50. A group variety defined by a semigroup law, *J. Austral. Math. Soc. (Series A)* 60 (1996), 255-259 (with A. Storozhev).
51. Genericity of the class of groups in which subgroups with fewer number of generators are free, *Matem. Zametki*, 59 (1996), N 4, 489-496 (in Russian; with G. N. Arzhantseva).
52. Hyperbolic groups and their quotients of finite exponent, *Trans. Amer. Math. Soc.* 348 (1996) N 6, 2091-2138 (with S. V. Ivanov).
53. On finite and locally finite subgroups of free Burnside groups of large even exponents, *Journal of Algebra*, 195(1997), 241-284 (with S. V. Ivanov).
54. On the subgroup distortion in finitely presented groups, *Matem. Sbornik*, 188 (1997), N 11, 73-120 (in Russian).

55. Some constructions relating to hyperbolic groups, London Math. Soc. Lecture Notes Ser., 252 (1998), 263-290 (joint with K. V. Mikhalovskii).
56. Distortion functions for subgroups, in "Geometric Group Theory Down Under", Proc. of a Special Year in Geometric Group Theory, Canberra, Australia, 1996, Ed. J. Cossey, ..., Walter de Gruyter, Berlin - New York, 1999, 281-291.
57. The growth of finite subgroups in p-groups, London Math. Soc. Lect. Note Ser. 261 (1999), 579-595.
58. Quadratic isoperimetric functions of the Heisenberg groups. A combinatorial proof, Algebra, 11, J. Math. Sci. (new York) 93 (1999), no. 6,, 921-927 (with M. V. Sapir).
59. Length functions on subgroups in finitely presented groups, In "Groups - Korea '98", Proc. Intern. Conf., Pusan, Korea, 1998, Ed. Young Gheel Baik ..., Walter de Gruyter, Berlin - New York, 2000, 297-304 (with M.V.Sapir).
60. Embeddings of relatively free groups into finitely presented groups, Contemp.Math., 264 (2000), 23-47 (joint with M.V.Sapir)
61. On the Bass - Lubotzky question about quotients of hyperbolic groups, Journal of Algebra, 226 (2000), 807-817 .
62. Length and area functions in groups and quasi-isometric Higman embeddings, Intern. J. Algebra and Comput., 11 (2001), no. 2 , 137-170 (with M.V.Sapir).
63. Non-amenable finitely presented torsion-by-cyclic groups, Electron. Res. Announc. Amer. Math. Soc. 7 (2001), 45-53 (<http://www.ams.org/era> ; with M.V.Sapir).
64. Comparison of products of the varieties of Lie algebras, Communications in Algebra, 29(2001), no. 9, 4267-4275 (with. A.L. Shmelkin).
65. Isoperimetric functions of groups and combinatorial complexity of the word problem , Annals of Mathematics , 156 (2002), no. 2, 467-518 (with J.-C. Birget, E.Rips, M.Sapir).
66. Non-amenable finitely presented torsion-by-cyclic groups, Publ. Math. IHES, 96 (2003), no. 6, p.p. 1-123 (with M.V.Sapir).
67. Self-normalization of free subgroups in the free Burnside groups, in "Groups, Rings and Lie Algebras", Kluwer AP, 2003, 179-187.
68. Conjugacy problem for groups and Higman embeddings, Electronic Res. Announc. of the AMS", 9 (2003), 40-50 (with M.V.Sapir).
69. Conjugacy problem and Higman embeddings, "Memoirs of the AMS" 170(2004), no. 804 p.p. vii+131 (with M.V.Sapir)

70. Subgroups of finitely presented groups with solvable conjugacy problem, *Intern. J. Algebra and Comput.*, 15, no. 5-6 (2005), 1-10 (with M.V.Sapir)
71. Groups with non-simply connected asymptotic cones, *Contemporary Mathematics*, 394 (2006), 203-208 (with M.V.Sapir).
72. Groups with small Dehn functions and bipartite chord diagrams, *Geometric and Functional Analysis*, 16 (2006), 1324-1376 (with M.V.Sapir).
73. On finite definability of groups $F/[M,N]$, "Vestnik Moskovskogo Universiteta" (Proc. of the Moscow State University), Ser. 1, 2007, no.6, 19-21 (with O.V.Kulikova)
74. Groups with quadratic-non-quadratic Dehn functions, *Intern. J. Algebra and Comput.*, 17(2007), no. 2, p.p. 401-419.
75. A finitely presented group with two non-homeomorphic asymptotic cones, *Intern. J. Algebra and Comput.*, 17(2007), no.2, p.p. 421-426 (with M.V.Sapir)
76. Large restricted Lie algebras, *Journal of Algebra*, 310 (2007), no. 1, 413-427 (with Yu.A.Bahturin).
77. Linear automorphism groups of relatively free groups. "Turkish Journal of Mathematics", 31(2007) (suppl., dedicated to the memory of Brian Hartley), 105-111.
78. A 2-generated 2-related group with no non-trivial finite quotients. *Algebra and Discrete Math.* 2007, no. 2, 111-114 (with M.V.Sapir).
79. Large groups and their periodic quotients. *Proc. of the AMS*, 136 (2008), no. 3, 753-759 (with D.V.Osin).
80. On products of T-ideals in free algebras and free group algebras. "Journal of Pure and Applied Algebra", 213(2009), no. 2, 259-263.
81. Schreier rewriting beyond the classical setting. "Science in China", Ser. A, Mathematics (Springer), 52 (2009), no.2, 231-243 (with Yu.A.Bahturin).
82. Periodic quotients of hyperbolic and large groups, accepted in "Groups, Geometry and Dynamics" (with A.Minasyan and D.Sonkin), 26 p.p; see also <http://arxiv.org/abs/0804.3328>).
83. Lacunarily hyperbolic groups. Submitted. 88 p.p. (with D.V.Osin and M.V.Sapir)
84. On k-free-like groups. Submitted. 8 p.p. (with M.V.Sapir), see also arXiv: 0811.1607.
85. Actions of maximal growth. Submitted. 64 p.p. (with Yu.A.Bahturin) see also <http://arXiv: 0901.0566>.

The following papers have been published in the *Soros Educational Journal*.

84. Multiplication of symmetries and transformations, no. 5 (1996), 115-120 (in Russian).
85. Group calcula, no. 10 (1996), 114-119 (in Russian).
86. Planar graphs, no. 11 (1996), 117-122 (in Russian).
87. On the complexity of computations in groups, no. 3 (2000), 120-125 (in Russian).