

Natalia Amburg

Curriculum vitae

Last Name: Amburg

First Name: Natalia

Place of Birth: Kemerovo, Russia

Date of Birth: 22 December, 1975

Citizenship: Russia

Marital status : Married

Children: Iakov (2007), Photinia (2007), Anna (2009), Ivan (2014)

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Academic qualifications:

1998 M.Sc. Degree the Moscow State University

2004 Ph.D. Degree the Moscow State University

Ph.D. Thesis: Embedded Graph Symmetries and Algebraic Curves

Education:

1993-1998 Department of Mathematics and Mechanics, the Moscow State University

1998-2001 Ph.D. student at the Moscow State University, Department of Mathematics and Mechanics, Faculty of Higher Algebra

Positions held:

2000 - present: Scientific Researcher of Laboratory of Mathematical Physics, State Scientific Center of Russian Federation, Institute of Theoretical and Experimental Physics (ITEP)

2007-2011: Scientific Researcher of Moscow Institute of Open Education

2007 - present: 179 school

2003 - 2015 Department of elementary particles, MIPT

2001, 2006-2007 Independent University of Moscow

2003 Los Alamos National Laboratory

Teaching experience:

- Course of lectures “Theory of Lie groups and their representations”, ITEP, chair “Elementary particles physics” of MIPT, 2001-2015.
- Series of courses of lectures and tutorials on mathematics (Calculus, complex analysis, special functions and their applications) ITEP, chair “Elementary particles physics” of MIPT 2003-2005.
- Teaching Assistant at Independent University of Moscow, Complex analysis (practice) 2001, Algebra 2006-2007

- Many lectures and seminars at different programs on continuous education by Mathematical Physics Group, 1998-2018.
- Calculus, Algebra and Geometry, 179 school, 2002-2018.
- Deputy head of the seminar “Graphs on surfaces and algebraic curves over \bar{Q} ”, MSU, Moscow 2004-2018.

Some conferences and invited talks:

- Семинар «Характеристические классы и теория пересечений», ВШЭ, Москва, О паре Белого клеточного разбиения ориентирующего накрытия $\overline{M_{0,N}(\mathbb{R})}$, Н.Я.Амбург, Е.М.Крейнес, 26.04.2018
- Seminar of Angevin Research Laboratory in Mathematics (Universite Angers) 21/03/2018 14h00: Bring curve and Deligne-Mumford compactification of the moduli space of real algebraic curves of genus with 5 marked points, Natalia Amburg
- Многочлен Пуанкаре пространства $\overline{M_{0,N}(\mathbb{C})}$ и количество точек пространства $\overline{M_{0,N}(\mathbb{F}_q)}$, Н. Я. Амбург, Взрослая математика вокруг детских рисунков. Международная конференция, посвященная 65-летию Г. Б. Шабата. 25 мая 2017 г. 09:40
- Lecture course on XII International School ITP-HSE-ITP on Theoretical and Mathematical Physics, Sevastopol, Ukraine, May 2013
- Talk “Piecewise flat metrics in Polyakov’s approach to bosonic strings”, NRU HSE, March 14, 2013
- Talk “Poincare series of the Deligne-Mumford compactification $\overline{M_{0,N}(\mathbb{C})}$ and number of points of $\overline{M_{0,N}(\mathbb{F}_q)}$ ”, MSU, December 10, 2012
- Talk “Bely theory as a simplest example of gauge/string duality” 5th Workshop on Geometric Methods in Theoretical Physics, SISSA, July 3 - 7, 2012
- Talk “Piecewise flat metrics and bosonic strings”, Seminar of the School of Mathematics and Statistics, Glasgow University, UK, 25th of October, 2011
- 4rd Workshop on Geometric Methods in Theoretical Physics, SISSA, Italy, Trieste, July 6 - 12, 2011
- Международный алгебраический симпозиум, посвященный 80-летию кафедры высшей алгебры механико-математического факультета МГУ и 70-летию профессора А. В. Михалева, Москва, 15 - 18 ноября 2010 г.
- Integrability in topological string and field theory, SISSA, Italy, Trieste, July 5 - 9, 2010
- IX International School ITP-ITEP in Theoretical and Mathematical Physics, Sevastopol, Ukraine, May 2010
- 2nd Workshop on Geometric Methods in Theoretical physics, SISSA, Italy, July 13 - July 18, 2009
- Международная алгебраическая конференция посвященная 100-летию со дня рождения А.Г.Куроша, Москва, 2008
- Workshop on Geometric Methods in Mathematical physics, SISSA, Italy, June 30 - July 5, 2008

- VII International School ITP-ITEP in Theoretical and Mathematical Physics, Kiev, Ukraine, May 2008
- V International School ITP-ITEP in Theoretical and Mathematical Physics, Brovari, Ukraine, May 2005

2004: International Algebraic Conference on the occasions of the 250-th anniversary of Moscow State University and the 75-th anniversary of the Department of Algebra, Moscow, Moscow State University, Department of Algebra May 26 - June 2, 2004; Applications of Random Matrices in Physics, June 6-25 2004, Les Houches, France; International School ITP-ITEP in Theoretical and Mathematical Physics, Brovari, Ukraine, May 2004;

2003: November, 2003, Seminar of Center for Non-linear Studies, Los Alamos National Laboratory, USA; Quantum Fields and Strings, August 2-9, 2003, Dombay, Russia; International School ITP-ITEP in Theoretical and Mathematical Physics, Brovari, Ukraine, May 2003; Se'minare Physique Mathe'matique, De'partement et laboratoire de mathe'matiques de l'universite' d'Angers, March 23, 2003; 65th Workshop on General Algebra, March 21–23, 2003, University of Potsdam, Potsdam, Germany; QUANTUM GROUPS AND INTEGRABLE SYSTEMS, 12–14 June, 2003, Prague, Czech Republic;

2002: International School ITP-ITEP in Theoretical and Mathematical Physics, Brovari, Ukraine, May 2002; XXX ITEP WINTER SCHOOL OF PHYSICS; THE XIVth SUMMER SCHOOL-SEMINAR VOLGA-2002 Russia, Tatarstan, Kazan, Borovoye Matyushino, June 22 - July 3.

2001: International School ITP-ITEP in Theoretical and Mathematical Physics, Vorzel, Ukraine, May 2001; XLIV Scientific conference of Moscow Institute for Physics and Technology; Workshop on Galois Connections, Germany, Potsdam, 18-22.03.01.

2000: NATO Advanced Research Workshop: Dynamical Symmetries of Integrable Quantum Field Theories and Lattice Models Kiev, September 25 - 30, 2000; XXVIII ITEP WINTER SCHOOL OF PHYSICS, February 22 - March 1, 2000; 12'th International Conference on Formal Power Series and Algebraical Combinatorics, Russia, Moscow, 26-30.06.00; International Algebraic Seminar, Dedicated to the 70-th Anniversary of Shmidt's seminar, Russia, Moscow, 13-16.11.00.

1999: 14 Conference of Young Algebraists, Germany, Potsdam, 05-07.02.99; International Algebraic Seminar devoted to 70 Anniversary of Higher Algebra Faculty of MSU, Russia, Moscow, 10-12.02.99.

Brief description of research interests: Scientific research area is Algebraic Geometry, Algebraic Combinatorics, Combinatorial Topology, and Graph Theory, Random Matrix Models, Moduli space of algebraic curves, String Theories. Major research results are in Combinatorics, Theory of Belyi Pairs, Graph Theory, Grothendieck's dessins d'enfant theory and Strebel Differentials.

List of publications:

- N.Amburg Regular unicellular dessins d'enfants and Weil curves. // Formal Power Series and Algebraic Combinatorics.—Berlin: Springer-Verlag, 2000, p. 393-401.
- Amburg, N. Ya. Realization of regular unicellular dessins d'enfants with a

cyclic automorphism group. (Russian) Mathematical methods and applications (Russian) (Moscow, 1998), 128–133, Mosk. Gos. Sots. Univ., Moscow, 1998.

- N. Ya. Amburg Regular unicellular dessins d'enfants with a cyclic automorphism group. // International Algebraic Seminar devoted to 70 Anniversary of Higher Algebra Faculty of MSU, Russia, Moscow, 10-12.02.99– p.7–8.
 - Amburg, N. Ya. An example of a regular Strebel differential. (Russian) Uspekhi Mat. Nauk 57 (2002), no. 5, 145–146; translation in Russian Math. Surveys 57 (2002), no. 5, 987–988
 - N. Ya. Amburg, E. M. Kreines, G. B. Shabat Parasitic solutions of systems of equation for Belyi Function for plane trees.// Vestnik MGU ser.1, Mathematics. Mechanics. 2004. N1 с. 20 – 25
 - Н. М. Адрианов, Н. Я. Амбург, Ю. Ю. Кочетков, Е. М. Крейнс, Ю. А. Левицкая, В. Ф. Насретдинова, Г. Б. Шабат, Каталог функций Белого детских рисунков с не более чем четырьмя ребрами, Фундаментальная и прикладная математика, Vol. 13, No. 6, pp. 35-112
 - N. M. Adrianov, N. Ya. Amburg, V. A. Dremov, Yu. Yu. Kochetkov, E. M. Kreines, Yu. A. Levitskaya, V. F. Nasretdinova, G. B. Shabat . Catalog of dessins d'enfants with no more than 4 edges, Journal of Mathematical Sciences, Vol. 158, No. 1, 2009
 - N.Ya. Amburg, E.M. Kreines, Computation of the first Stiefel-Whitney class for the variety $\overline{\mathcal{M}}_{0,n}^{\mathbb{R}}$, Journal of Mathematical Sciences, Vol. 209, No. 2, August, 2015
 - N.Ya. Amburg, E.M. Kreines, G.B. Shabat, Poincare Polynomial of the Space of $\overline{M}_{0,N}(\mathbb{C})$ and number of points of the space $\overline{M}_{0,N}(\mathbb{F}_q)$, Moscow University Mathematics Bulletin, Vol. 72, issue 4, P. 154-160, July 2017
- Н.Я.Амбург, Е.М. Крейнс, Г.Б. Шабат, Многочлен Пуанкаре пространства $\overline{M}_{0,N}(\mathbb{C})$ и количество точек пространства $\overline{M}_{0,N}(\mathbb{F}_q)$, Вестник Московского Университета. Серия 1: Математика. Механика Номер: 4 Год: 2017 Страницы: 20-27
- Amburg N. Piecewise flat metrics and bosonic strings, in preparation.