CURRICULUM VITAE

Masha Vlasenko

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Born: December 25, 1979 — Kyiv
Nationality: Ukrainian

Current position

2021- *Associate Professor*, Department of Algebra and Algebraic Geometry
Institute of Mathematics of the Polish Academy of Sciences

Areas of specialization

Number theory

Previous positions

2004-2005 *Research fellow*, Institute of Mathematics, Kyiv
2005-2006 *Postdoctoral research fellow*, Max Planck Institute for Mathematics, Bonn
2007-2008 *Postdoctoral research fellow*, Institut des Hautes Études Scientifiques, Bures-sur-Yvette
2008-2009 *Postdoctoral research fellow*, Max Planck Institute for Mathematics, Bonn
2009-2011 *Research fellow*, Max Planck Institute for Mathematics, Bonn
2011-2013 *Lecturer*, Trinity College Dublin
2013-2015 *Lecturer*, University College Dublin
2015-2021 *Adiunkt (assistant professor)*, Institute of Mathematics of the Polish Academy of Sciences

Education and scientific degrees

2001 MSc in Applied Mathematics, National Technical University of Ukraine
2005 PhD in Mathematics, Institute of Mathematics, National Academy of Sciences of Ukraine
2021 Habilitation, Institute of Mathematics of the Polish Academy of Sciences

Awards

1992-1996 Winner of the Ukrainian National Mathematics Competition for Young Mathematicians

1996 Grant from the Soros Foundation Educational Program

1998-1999 Winner of the Ukrainian National Mathematics Competition for University Students

2007-2009 Stipendium of the European Post-Doctoral Institute for Mathematical Sciences

2017-2020 Grant OPUS from the National Science Centre of Poland (UMO-2016/21/B/ST1/03084)

2021-2025 Grant OPUS from the National Science Centre of Poland (UMO-2020/39/B/ST1/00940)

Publications

2000 Trigonometric series with uniformly distributed coefficients, **Ukrainian Math. J.** 52 (2000), no.6, 876–885

2001 Non-Ito stochastic differentials and quadratic variation of corresponding anticipating integral, **Theor. Stoch. Proc.** 7 (2001), no. 3-4, 118–130

2002 Equations with random Gaussian operators with an unbounded mean, **Ukrainian Math. J.** 54 (2002), no. 2, 207–217

2004a On the growth of an algebra generated by a system of projections with fixed angles, **Methods Funct. Anal. Topology**, v.10 (2004), no. 1, 98–104

2004b (with N. Popova) On configurations of subspaces of the Hilbert space with fixed angles between them, **Ukrainian Math. J.** 56 (2004), no. 5, 730–740

2004c Description of the center of certain quotients of the Temperley-Lieb algebra of type $\widetilde{A}_N$, **Algebra Discrete Math.** 2004, no. 3, 144–156

2005a Visitation measures for some sequences of random variables with decreasing coefficients, **Theory Probab. Appl.** 49 (2005), no. 1, 176–186

2005b (with A. Mellit and Yu. Samoilenko) On algebras generated by linearly connected generators with a given spectrum, **Funct. Anal. Appl.** 39 (2005), no. 3, 175–186

2006 The graded ring of quantum theta functions for noncommutative torus with real multiplication, **International Mathematical Research Notices** 2006, 1–19

2011 (with S. Zwegers) Nahm's conjecture: asymptotic computations and counterexamples, **Communications in Number Theory and Physics** 5 (2011), 617–642

2012 (with K. Hutchinson) Lines crossing a tetrahedron and the Bloch group, in *Contributions to Algebraic Geometry*, IMPANGA lecture notes, **EMS Series of Congress Reports**, 297 – 304

2013a (with D. Zagier) Higher Kronecker "limit" formulas for real quadratic fields, **Journal für die Reine und Angewandte Mathematik** 679 (2013), 23–64

2013b (with A. Holroyd, K.Mahlburg and K.Bringmann) k-run overpartitions and mock theta functions, **Quarterly Journal of Mathematics** 64 (2013), 1009–1021

2014 (with E. Shinder) Linear Mahler measures and double L-values of modular forms, **Journal of Number Theory** 142 (2014), 149–182

2015 (with V. Golyshev) Equations D3 and spectral elliptic curves, in *Feynman Amplitudes, Periods and Motives*, **Contemporary Mathematics** 648 (2015), 135–152

2016 (with A. Mellit) Dwork's congruences for the constant terms of powers of a Laurent

polynomial, **International Journal of Number Theory**, vol. 12, no. 2 (2016) 313–321

2017 On p-adic unit-root formulas, in Proceedings of the program "Hypergeometric motives and Calabi–Yau differential equations" held at the MATRIX research institute in January 8–28, 2017 (see https://www.matrix-inst.org.au/2017-matrix-annals/)

2018 Higher Hasse–Witt matrices, **Indagationes Mathematicae** 29 (2018), 1411–1424

2019 Formal groups and congruences, **Transactions of the AMS**, vol. 371, no. 2 (2019), 883–902

2020 (with F. Beukers) Dwork crystals I & II, accepted by **International Mathematical Research Notices**

Invited speaker

2010 K-Theory, Quadratic Forms and Number Theory Seminar, University College Dublin

2011 Seminar on Algebra, Geometry and Physics, MPIM Bonn
Explicit methods in number theory, Oberwolfach

2012 Modular forms, mock theta functions, and applications, University of Cologne
K-Theory, Quadratic Forms and Number Theory Seminar, University College Dublin
Hypergeometric series and their generalizations, IHP Paris
Irish Geometry Conference, University College Cork
Periods and motives: a modern perspective on renormalization, ICMAT Madrid
Galois representations and pencils of Calabi-Yau motives, MPIM Bonn

2013 27th Automorphic Forms Workshop, University College Dublin
Arctic Number Theory Workshop, Saariselkä
Special functions and special numbers, Utrecht University
Explicit methods in number theory, Oberwolfach

2014 Dublin Area Mathematics Colloquium
L-functions and modular forms, ICTP Trieste
Number Theory Seminar, University of Warwick

2015 Recurrences and L-values seminar, MPIM Bonn
Regulators, Mahler measures, and special values of L-functions, CRM Montréal
Explicit methods in number theory, Oberwolfach
IMPANGA, Warsaw
SFB-Kolloquium, Mainz
Algebra Seminar, Institute of Mathematics, Kyiv

2016 Geometry Seminar, University of Gdansk
Moduli and automorphic forms, HU Berlin
Algebra, geometry and arithmetic seminar, UAM Poznan
Automata, algebraicity and G-functions workshop, Porquerolles

2017 Number Theory Seminar, Université Lyon 1
Arithmetic geometry seminar, ENS de Lyon
p-adic cohomology and arithmetic applications, Banff
IMPANGA, Warsaw

2018 Periods in number theory, algebraic geometry and physics, HIM Bonn
Seminar on Algebra, Geometry and Physics, MPIM Bonn

Dutch InterCity Number Theory Seminar, Utrecht
Heilbronn Seminar, University of Bristol
Algebra, arithmetic and combinatorics of differential and difference equations, CIRM Lumini
Structures in local quantum field theories, Ecole de Physique des Houches
Algebraic Geometry Seminar, University of Warsaw
Algebra Seminar, Institute of Mathematics, Kyiv

2019 Number Theory and Arithemetic Geometry Seminar, UC Berkeley
Tansient Transcendence in Transylvania, Brasov
Arithmetic of Connections school, Monte Veritá
IMPANGA, Warsaw
p-adic cohomology and arithmetic geometry, Tohoku University
Algebra and Geometry Seminar, University of Utrecht
Arithmetic Geometry Seminar, AMU Poznań
Algebra Seminar, Institute of Mathematics, Kyiv

2020 Isaac Newton Institute for Mathematical Sciences, Cambridge
Number Theory Days, University of Regensburg
Low-dimensional topology and number theory, Oberwolfach

Research visits

07-09/2017 Institut des Hautes Études Scientifiques, Bures-sur-Yvette
01-04/2018 Hausdorff Institute for Mathematics, Bonn
01-04/2019 Mathematical Sciences Research Institute, Berkeley
01-02/2020 Isaac Newton Institute for Mathematical Sciences, Cambridge

Organizer

2002-2013 International Mathematics Competition for University Students
2014 Irish Intervarsity mathematics contest
L-functions and modular forms, school and workshop at ICTP Trieste
2017 Hypergeometric motives and Calabi–Yau differential equations, a program at the MATRIX Research Institute at Melbourne
2018 Varieties: Arithmetic and Transformations, Simons semester at the Banach Center in Warsaw
Arithmetic of differential equations, a school at the University of Warsaw pension in Lukecin
2020- Number Theory Seminar, IMPAN Warsaw

Teaching

Short lecture courses and expository talks

2006 Lectures on complex multiplication, Institute of Mathematics, Kyiv
2011 Introduction to modular forms, ICTP, Trieste
2012 Apery's constant and other geometric numbers: towards understanding the motivic Galois group, University College Dublin
Internal geometry of surfaces, Trinity College Dublin
2013 Binomial coefficients and p-adic continuity, University College Dublin
2014 p-adic cohomology and counting points on varieties over finite fields, ICTP, Trieste

Lecture courses

2011-2013 Multivariable calculus for science, Trinity College Dublin
2011-2013 Introduction to number theory, Trinity College Dublin
2012 Introduction to modular forms, Trinity College Dublin
2013 Lebesgue integral, Trinity College Dublin
2013-2014 Multivariable calculus, University College Dublin
2014-2015 Linear algebra, University College Dublin
2014 Modular forms of one variable (graduate course), University College Dublin
2020 Introduction to modular forms, University of Warsaw

Advising undergraduate research projects

2012 Una Eilis Ni Eigeartaigh, Ramified coverings of the Riemann sphere
Aran Nolan, Padraig Condon and Ewan Dalby, Extremal Laurent polynomials in two dimensions
Jack Kelly, Modular parametrisation of families of elliptic curves
Eoin Ó Murchadha, Generalizing Menelaus' theorem to algebraic curves
2013 David Mulligan, Weil conjectures for elliptic curves
Jack Kelly, Algebraic hypergeometric functions
Adam Keilthy, Owen Ward and Jack Geary, Integral ratios of factorials
2014 Ewan Dalby, Congruences for the coefficients of modular forms
2015 Seán Mac Dhonnagáin, Congruences for the coefficients of powers of a polynomial
2016 Mieszko Komisarczyk and Pawel Poczobut, Generalizing Bernoulli numbers