

# Yuri Ivanovich Manin



## Academic career

1960	PhD, Steklov Mathematical Institute, Moscow, Russia
1963	Habilitation, Steklov Mathematical Institute, Moscow, Russia
1960 - 1993	Principal Researcher, Steklov Mathematical Institute, Russian Academy of Sciences, Moscow, Russia
1965 - 1992	Professor (Algebra Chair), University of Moscow, Russia
1992 - 1993	Professor, Massachusetts Institute of Technology, Cambridge, MA, USA
1993 - 2005	Scientific Member, Max Planck Institute for Mathematics, Bonn
1995 - 2005	Director, Max Planck Institute for Mathematics, Bonn
2002 - 2011	Board of Trustees Professor, Northwestern University, Evanston, IL, USA
Since 2005	Professor Emeritus, Max Planck Institute for Mathematics, Bonn
Since 2011	Professor Emeritus, Northwestern University, Evanston, IL, USA

## Honours

1963	Moscow Mathematical Society Award
1967	Highest USSR National Prize (Lenin Prize)
1987	Brouwer Gold Medal
1994	Frederic Esser Nemmers Prize
1999	Rolf Schock Prize
1999	Doctor honoris causa, University of Paris VI (Université Pierre et Marie Curie), Sorbonne, France
2002	King Faisal Prize for Mathematics
2002	Georg Cantor Medal of the German Mathematical Society
2002	Abel Bicentennial Doctor Phil. honoris causa, University of Oslo, Norway
2006	Doctor honoris causa, University of Warwick, England, UK
2007	Order Pour le Mérite, Germany
2008	Great Cross of Merit with Star, Germany
2010	János Bolyai International Mathematical Prize
2011	Honorary Member, London Mathematical Society

## Invited Lectures

1966	International Congress of Mathematicians, Moscow, Russia
1970	International Congress of Mathematicians, Nice, France
1978	International Congress of Mathematicians, Helsinki, Finland
1986	International Congress of Mathematicians, Berkeley, CA, USA
1990	International Congress of Mathematicians, Kyoto, Japan
2006	International Congress of Mathematicians, special activity, Madrid, Spain

## Research profile

Currently I work on several projects, new or continuing former ones. They include:

- development and understanding of recently discovered by me “zeta polynomials”, conjecturally producing Euler factors of Mellin transforms of cusp forms “in characteristic one”.
- developing the theory of non-commutative modular symbols and Dedekind symbols.
- studying the motivic properties of moduli spaces and non-commutative modular symbols.

### Editorships

- Mathematical Sbornik (Member, Editorial and Advisory Boards)
- Uspekhi Mat. Nauk
- Inventiones Math.
- Duke Mathematical Journal
- Functional Analysis and its Applications
- Crelle’s Journal
- Journal of Number Theory
- Journal of Geometry and Physics
- Advances of Math.
- International Journal of Mathematics
- American Journal of Mathematics
- Algebra and Number Theory et al. (various years)

**Research Area C** The foundations of quantum cohomology of algebraic varieties have been developed by Kontsevich, Manin, Pandharipande, and many others some 15 years ago. Variants and the finer structure are currently investigated. In [5], weighted stable curves are generalized to weighted stable maps and wall-crossing phenomena are studied in the space of stability conditions. In [6], signal analysis and non-commutative geometry are brought together. In [1], new quantum pictures of the Universe near the Big Bang point were developed.

### Supervised theses

PhD theses: 51

### Selected PhD students

Vasili Iskovskih (1968)

Yuri Zarkhin (1975): “Tate’s conjectures for abelian varieties in finite characteristic”

Vladimir Drinfeld (1978),

now Harry Pratt Judson Distinguished Service Professor, University of Chicago, IL, USA

Alexei Panchishkin (1979): “Convolutions of Modular Forms of Integral and Half Integral Weight”,  
now Professor, Institut Fourier, Grenoble University I

Mikhail Vishik (1980),

now Professor, University of Texas, Austin, TX, USA

Ivan Penkov (1987): “Typical Modules over Classical Lie Superalgebras and their Geometric Realizations”,

now Professor, Jacobs University Bremen

Alexander Voronov (1988),

now Professor, University of Minnesota-Minneapolis, MN, USA

Yuri Tschinkel (1992): “Arithmetic of Algebraic Surfaces”,

now Professor, New York University, NY, USA

Arend Bayer (2006): “Semisimple Quantum Cohomology, Deformations of Stability Conditions and the Derived Category”,

now Reader, University of Edinburgh, Scotland, UK

Alexander Beilinson,

now David and Mary Winton Green University Professor, University of Chicago, IL, USA

Ivan Cherednik,

now Austin M. Carr Distinguished Professor, University of North Carolina at Chapel Hill, NC, USA

Mikhail Kapranov

Vladimir Berkovich,

now Professor, Weizmann Institute of Science, Israel  
Alexei Skorobogatov,  
now Professor, Imperial College London, England, UK

## Selected publications

- [1] Yuri Manin and Matilde Marcolli. Symbolic dynamics, modular curves, and bianchi ix cosmologies. *Ann. Fac. Sci. Toulouse Math. (6)*, 25(2-3):517–542, 2016.
- [2] Yu. I. Manin. Zipf’s law and levin probability distributions. *Funktsional. Anal. i Prilozhen.*, 48(2):51–66, 2014.
- [3] Yuri Manin and Matilde Marcolli. Kolmogorov complexity and the asymptotic bound for error-correcting codes. *J. Differential Geom.*, 97(1):91–108, 2014.
- [4] Yuri I. Manin. Renormalisation and computation ii: time cut-off and the halting problem. *Math. Structures Comput. Sci.*, 22(5):729–751, 2012.
- [5] Arend Bayer and Yu. I. Manin. Stability conditions, wall-crossing and weighted gromov-witten invariants. *Mosc. Math. J.*, 9(1):3–32, backmatter, 2009.
- [6] Franz Luef and Yuri I. Manin. Quantum theta functions and gabor frames for modulation spaces. *Lett. Math. Phys.*, 88(1-3):131–161, 2009.
- [7] A. Losev and Yu. Manin. Extended modular operad. In *Frobenius manifolds*, Aspects Math., E36, pages 181–211. Friedr. Vieweg, Wiesbaden, 2004.
- [8] Sergei I. Gelfand and Yuri I. Manin. *Methods of homological algebra*. Springer Monographs in Mathematics. Springer-Verlag, Berlin, second edition, 2003.
- [9] Yuri I. Manin and Matilde Marcolli. Continued fractions, modular symbols, and noncommutative geometry. *Selecta Math. (N.S.)*, 8(3):475–521, 2002.
- [10] Yuri I. Manin. Theta functions, quantum tori and heisenberg groups. *Lett. Math. Phys.*, 56(3):295–320, 2001. EuroConference Mosh’e Flato 2000, Part III (Dijon).
- [11] M. Kontsevich and Yu. Manin. Gromov-witten classes, quantum cohomology, and enumerative geometry [mr1291244 (95i:14049)]. In *Mirror symmetry, II*, volume 1 of *AMS/IP Stud. Adv. Math.*, pages 607–653. Amer. Math. Soc., Providence, RI, 1997.
- [12] K. Behrend and Yu. Manin. Stacks of stable maps and gromov-witten invariants. *Duke Math. J.*, 85(1):1–60, 1996.
- [13] M. Kontsevich and Yu. Manin. Quantum cohomology of a product. *Invent. Math.*, 124(1-3):313–339, 1996. With an appendix by R. Kaufmann.
- [14] Jens Franke, Yuri I. Manin, and Yuri Tschinkel. Erratum: “rational points of bounded height on fano varieties” [*invent. math.* 95(1989), no. 2, 421–435; mr0974910 (89m:11060)]. *Invent. Math.*, 102(2):463, 1990.
- [15] Yu. I. Manin. Hypersurfaces cubiques. ii. automorphismes birationnels en dimension deux. *Invent. Math.*, 6:334–352, 1969.