Yakov (Yasha) Savelyev

Profesor e investigador Titular A
(Roughly associate professor)
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Personal

Born: January 17, 1980, Moscow, Russia.
Citizenship: USA, Russia

Education

Ph.D. SUNY Stony Brook, August 2008
Ph.D Advisor: Dusa McDuff
B.S. Mathematics, SUNY Stony Brook, 2002

Languages

Russian: native
English: fluent
Spanish: proficient

Appointments

Visiting Assistant Professor, University of Massachusets, Amherst 2008- 2011
Postdoctoral Fellow, MSRI, spring 2010
Postdoctoral Fellow CRM-Montreal, August 2011- August 2013
Postdoctoral Fellow, ICMAT, Madrid, 2013-2015 december
Profesor e investigador Titular A, CUICBAS, University of Colima, start march 2016

Longer term professional visits

Tel Aviv University, winter 2009 (Invited by Leonid Polterovich)
RIMS Kyoto University, spring 2014 (Invited by Kaoru Ono)

Research interests

Symplectic and differential geometry, especially Gromov-Witten and Floer theory. More recently also geometric quantization and Yang-Mills theory. Connections of the above with algebraic topology, mathematical physics and dynamical systems.

Publications and Preprints

The list together with links is also at: Publication list

Geometry topology and dynamics

Quantum characteristic classes and the Hofer metric, Geometry & Topology, 12 (2008), pp. 2277–2326.

Virtual Morse theory on $\Omega Ham(M, \omega)$., J. Differ. Geom., 84 (2010), pp. 409–425.

Bott periodicity and stable quantum classes, Selecta Math.(2013) 19: 439-460

Gromov K-area and jumping curves in $\mathbb{CP}^n$, 2012, Algebraic and Geometric Topology

Proof of the index conjecture in Hofer geometry, Math. Res. Letters, Volume 20 (2013), 981-984

Morse theory for the Hofer length functional, Journal of topology and analysis, 08/2013; 06(02),

On the injectivity radius in Hofer geometry, with Francois Lalonde, Electronic Research announcements, Vol 21, 177-185, 2014

Yang Mills theory and jumping curves, Intern. Journ. of Math., 26, 13 pgs, 2015

On the Hofer geometry injectivity radius conjecture, International Mathematics Research Notices 2016; 7253-7267, doi: 10.1093/imrn/rnw023

Floer theory and topology of $Diff(S^2)$, Journal of symplectic geometry, vol 3, 7253-7267, 2017

Extended Fuller index, sky catastrophes and the Seifert conjecture, Inter. J. Math., (2018), https://doi.org/10.1142/S0129167X18500969

Twisted and untwisted K-theory quantization and symplectic topology, (with Egor Shelukhin), JSG, 2018, accepted

Global Fukaya category and quantum Novikov conjecture I, arxiv preprint, submitted

Global Fukaya category and quantum Novikov conjecture II, arxiv preprint, submitted

Non-squeezing in lcs geometry and holomorphic Weinstein conjecture, arxiv preprint, submitted

Logic, game theory and computation

Analogues of Gödel statements and computability of intelligence, submitted, arxiv preprint

Time symmetric Go, arxiv preprint

Preprints not ready for publication

Spectral geometry of the group of Hamiltonian diffeomorphisms, arxiv preprint

On configuration spaces of stable maps, arxiv preprint

Service

Referee for mathematical journals, and reviewer for Zentralblatt.
Co-organizer for symplectic geometry seminar at CRM-Montreal for the 2012-2013 year.
link to list of speakers
Co-organizer for the PRIMA mathematical congress in Oaxaca, 2017
Co-organizer for the weekly seminar at the University of Colima, since 2016
Organizer for the student seminar Fall, 2019
Responsible for advising various students, on academics and personal well being, Colima, since 2016
Participant in outreach activities for attracting high school students to mathematics, Colima. In particular I have given lectures to high schoolers.
Member of "academia mathematica" which is in charge of organizing academic activities and has various administrative duties, like course selection for each semester, and distribution of teaching duties.

Fellowships and Awards

Department research award, 2006 Stony Brook
Department travel grant, 2007 Stony Brook
NSF travel grant 2006, 2005
Chair's award for outstanding thesis, 2008 Stony Brook
MSRI Postdoctoral fellowship, spring 2010,
CRM-Montreal postdoctoral fellowship, 2011-2013
ICMAT Madrid postdoctoral fellowship, 2013-2015

Grants

SNI researcher grant, nivel 1, 2016-2019
PRODEP 2017-2019

Recent invited talks

CRM, Montreal, 2007.

Courant Institute of Mathematics, NYC, 2007.

Tel Aviv University, Topology and dynamics seminar, 2009.

University of Wisconsin, Madison, geometry-topology seminar, 2009.

UMASS, Amherst, geometry-topology seminar, (2 talks), 2008.

UMASS, Amherst, geometry-topology seminar, 2009.

Columbia University, geometry-topology seminar, 2009.

MSRI, research seminar, 2010.

CRM-Montreal, symplectic geometry seminar, 2011

UQAM, Montreal, CIRGET Seminar, 2012

IBS, Pohang, Korea, 2013

ICMAT, Madrid, May, 2013, (A talk on "Morse theory for the Hofer length functional")

CRM Barcelona, Fall 2013

ICMAT, Madrid Fall, 2013 (a 5 talk series of lectures on Hofer geometry)

ICMAT, Madrid Fall, 2013 ("Yang-Mills theory and Jumping curves")

University of Toronto, topology seminar, 2013

QGM, Aarhus, Denmark, 2013

Kyoto University, Institute of Mathematical sciences, 2014

Hebrew university of Jerusalem, Israel, 2014

University of Montpellier, France, 2014

Computense University, Madrid, Spain, 2014

HSE, National Center for Research, Moscow, March 25, 2015

symplectix, Inst. H. Poincare, Paris, April 15, 2015

University of Colima, Fall 2016

Institute for Advance Study, Princeton, 2017

Conference talks

ICMS, conference on "Symplectic Geometry and Transformation Groups", in honor of H. Hofer, 2010.

Georgia topology conference, 2011

Lodz, Poland conference: "Contact and symplectic topology, with a focus on open problems" (Part of the joint Israeli-Polish mathematical societies meeting.), 2011

Tokyo IMPU, Floer and Novikov homology, Contact topology and related topics, 2014

Colima workshop in Geometry, Jan 2015

Edinburg, ICMS, Workshop on symplectic geometry and topology, 2016

Aguascalientes, 49 Congreso de la Sociedad Matemática Mexicana, geometry section, 2016

ICTS, Bangalore, conference, three 1.5 hour lectures, 2018

Conference, Modelling consciousness, Oxford 2019 (invited, missed due to circumstances)

Montenegro, National Congress de la Sociedad Matemática Mexicana, logic and foundations, 2019

Teaching experience

3 years of lecturing experience as a graduate student at Stony Brook university. With 1 course per semester load. These were very large calculus sections with 100 or more enrolled students per section. I also TA'd at Stony Brook for calulus, business calculus, and graduate algebraic topology

(twice).

Another 2.5 years of lecturing experience as a visiting assistant professor at University of Massachusets, Amherst. (Away for half a semester at MSRI). I was doing 2 courses/sections per semester. Each section was small about 20-30 enrolled students. These were calculus and multivariable calculus sections.

Teaching at current home institution University of Colima, Mexico.

Spring 2016, Geometry-Topology: An advanced course for undergraduates following Spivak's Differential Geometry, and the classical papers of Shing-Shen Chern on the Gauss-Bonnet theorem.

Fall 2016, Calculus 3: Standard course in vector calculus following Lang.

Spring 2017, Topics in dynamical systems: A somewhat advanced course for undergraduates including: smooth dynamical systems, elements of symbolic dynamical systems, Markov chains, structural stability, Smale Horse shoe, Hamiltonian dynamics, Morse theory and Morse homology.

Fall 2017, Topology: A beginning course in topology, fairly standard except for early introduction of nets, and approach to Van-Kampen theorem via groupoids.

Fall 2017, Analysis: A very first course in rigorous analysis for undergraduates.

Spring 2018: algebraic topology, complex analysis

Fall 2018: Undergraduate courses in analysis, topology and differential geometry (3 courses)

Spring 2019: Discreet mathematics, Calculus on Manifolds (following Spivak) (2 courses)

Fall 2019: Topology-Geometry (topological spaces, compactness, fundamental groups and covering spaces, abstract smooth manifolds, Stokes theorem, De-Rham cohomology and applications), Multivariable calculus (2 courses).

Reference letters

Leonid Polterovich, Tel Aviv University and University of Chicago
Yael Karshon, University of Toronto
Mohammed Abouzaid, Columbia University
Viktor Ginzburg, UC Santa Cruz