

Yakov (Yasha) Savelyev

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(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 Massachusetts, 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

Conceptual approaches of category theory, topology and algebra in differential geometry, especially symplectic geometry, and in dynamical systems. I also have a constant attraction to mathematical ideas born in physics.

Interests more specifically: Floer-Gromov-Witten theory and its interactions with Hofer geometry and algebraic topology. Other recent interests (resulting in publications or preprints): sky catastrophes in dynamical systems, rigidity in locally conformally symplectic geometry, geometric quan-

tization and twisted-untwisted K-theory, generalized smooth spaces and smooth Kan complexes, incompleteness for stably computable formal systems.

PUBLICATIONS AND PREPRINTS

The list together with links is also at: [Publication list](#)

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

Virtual Morse theory on $\omega \text{Ham}(M, \omega)$, 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 , Algebraic and Geometric Topology, (2012), 2317–2327

Proof of the index conjecture in Hofer geometry, Math. Res. Letters, (2013), Volume 20, 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., (2015); 26, 13 pgs,

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

Floer theory and topology of $\text{Diff}(S^2)$, Journal of symplectic geometry, vol 3, 7253–7267, (2017)

Extended Fuller index, sky catastrophes and the Seifert conjecture, Inter. J. Math., (2018), pg 1–22, <https://doi.org/10.1142/S0129167X18500969>

Mean curvature versus diameter and energy quantization, Annales mathematiques du Quebec, 1-7, (2019), 10.1007/s40316-019-00127-0

K-theoretic invariants of Hamiltonian fibrations, (with Egor Shelukhin), Journal of Symplectic Geometry, Vol. 18, No. 1 (2020), pp. 251–289.

Global Fukaya category I, International Mathematics Research Notices, <https://doi.org/10.1093/imrn/rnad013>, 57 pages, 2023

Pseudoholomorphic curves on the lcs-ification of contact manifolds, (With Yong-Geun Oh), Adv. Geom. 23, No. 2, 153–190 (2023)

Locally conformally symplectic deformation of Gromov non-squeezing, Arch. Math. <https://doi.org/10.1007/s00013-023-01922-6> (2023)

SUBMITTED, AVAILABLE ON ARXIV

Global Fukaya category II: singular connections, quantum obstruction theory, and other applications, 44 pages

A conformal symplectic Weinstein conjecture, 29 pages

Incompleteness for stably computable formal systems, 23 pages

Smooth simplicial sets and universal Chern-Weil homomorphism, 40 pages

A remark on deformation of Gromov non-squeezing, 3 pages

MANUSCRIPTS (AVAILABLE ON ARXIV)

Simultaneous Go via quantum collapse

Spectral geometry of the group of Hamiltonian symplectomorphisms

On the topology of the space of stable curves

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 calculus, business calculus, and graduate algebraic topology (twice).

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

6+ years of teaching experience at the University of Colima, with a diverse teaching portfolio from basic classes like calculus and discrete mathematics to more advanced classes on algebraic topology and differential geometry. All classes are undergraduate as we do not have a graduate program. [Link](#) to the list of classes taught at current home institution University of Colima, Mexico.

SERVICE MENTORSHIP

Presented a number of colloquium talks to high school students, in Colima.

Advised a student on an undergraduate thesis, "Geometric methods in topology", she is now working on PhD at Umass Amherst.

Regular participant in outreach activities for attracting high school students to mathematics, since 2016, Colima. (For example career fair's.)

Undergraduate advising, 2-3 students each semester, since 2016

OTHER SERVICE

Elected member of the university "technical council", (university senate), since 2019.

Director of undergraduate advising of the faculty of science, since 2023.

Referee for the national science foundation grants.

I assist in the yearly mathematics competition for high school students which is organized by our department. In particular, I am involved in grading of the competition exams.

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

Organizer for the Go club, Fall 2022

Member of the department committee, which is in charge of organizing academic activities and has various administrative duties, like course selection for each semester, and distribution of teaching duties.

Referee for mathematical journals, and reviewer for Zentralblatt.

Co-organizer for symplectic geometry seminar at CRM-Montreal for the 2012-2013 year.

FELLOWSHIPS AND AWARDS

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- ongoing (15,000 USD annual)

PRODEP 2017-2019

Conacyt, Science Frontier Grant, 2023 (Principal Investigator)

SOME 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

Comutense 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

CIMAT, Guanajuato, Seminar de geometria algebraica, 2019

IBS Pohang, Korea, 2019

CRM Montreal, Geometry Seminar, 2022 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)

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

Facultad de Ciencias Físico Matemáticas en la Universidad Autónoma de Nuevo León, Congreso Nacional, 2019

Banff international research station, Locally Conformal Symplectic Manifolds: Interactions and Applications, 2021

American Institute of Mathematics, Conformal symplectic structures, contact topology, and foliations, 2021

REFERENCE LETTERS

Yasha Eliashberg, Stanford

Yael Karshon, University of Toronto and University of Tel Aviv

Mohammed Abouzaid, Columbia University