

## Yakov (Yasha) Savelyev

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Profesor e investigador Titular A  
(Roughly associate professor)  
CUICBAS  
University of Colima, Mexico  
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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 quantization 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  $\omega$ 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.

Pseudoholomorphic curves on the lcs-ification of contact manifolds, (With Yong-Geun Oh), 55 pages, *Advances in Geometry*, (Accepted), 2022

Global Fukaya category I, 57 pages, *IMRN* (Accepted), 2022

## SUBMITTED

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

*A conformal symplectic Weinstein conjecture*, 29 pages

*Locally conformally symplectic deformation of Gromov non-squeezing*, 9 pages

*Incompleteness for stably computable formal systems*, 23 pages

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

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.)

Responsible for advising various students, on academics and personal well-being, Colima, since 2016  
Presented a number of colloquium talks to high school students, in Colima.

## OTHER SERVICE

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 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

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

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 annual)  
PRODEP 2017-2019

## 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  
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  
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