

# S I M I O N F I L I P

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## EMPLOYMENT & EDUCATION

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Associate Professor	2019 – present	<b>University of Chicago</b>
PostDoc	2016 – 2021	CLAY RESEARCH FELLOW <b>Institute for Advanced Study (2018–2019)</b> <b>Harvard University, Junior Fellow (2016–2018)</b>
PhD	2010 – 2016	<b>University of Chicago</b> , ADVISOR: ALEX ESKIN
MA	2009 – 2010	<b>University of Cambridge, UK</b> PART III OF THE MATHEMATICAL TRIPOS <i>with Distinction</i>
AB	2005 – 2009	<b>Princeton University</b> , AB IN MATHEMATICS

## PAPERS & PREPRINTS

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### Published or Accepted

- *Tropical dynamics of area-preserving maps*  
[Journal of Modern Dynamics \(JMD\)](#) (2019) vol. 14, 179–226
- *Counting special Lagrangian fibrations in twistor families of K3 surfaces* [arXiv:1612.08684](#)  
Accepted, *Annales Scientifiques de l'École Normale Supérieure* (2018)
- *Smooth and Rough Positive Currents* (with V. Tosatti)  
[Annales de l'Institut Fourier \(AIF\)](#) (2018), vol. 68(7), 2981–2999, J.-P. Demailly Anniversary Volume
- *The Algebraic Hull of the Kontsevich–Zorich Cocycle* (with A. Eskin and A. Wright)  
[Annals of Mathematics](#) (2018) vol. 188, 281–313
- *Notes on the Multiplicative Ergodic Theorem*  
[Ergodic Theory and Dynamical Systems \(ETDS\)](#) (2019), vol. 39(5), 1153–1189
- *Quaternionic covers and monodromy of the Kontsevich–Zorich cocycle in orthogonal groups* (with G. Forni and C. Matheus)  
[Journal of the European Mathematical Society \(JEMS\)](#) (2018) vol. 20, 165–198
- *Zero Lyapunov exponents and monodromy of the Kontsevich–Zorich cocycle*  
[Duke Math Journal](#) (2017) vol. 166, 657–706
- *Families of K3 surfaces and Lyapunov exponents*  
[Israel Journal of Mathematics](#) (2018) vol. 226, 29–69
- *On Hölder-continuity of Oseledets subspaces* (with V. Araujo and A. Bufetov)  
[Journal of the London Mathematical Society \(JLMS\)](#) (2016) vol. 93, 194–218
- *Splitting mixed Hodge structures over affine invariant manifolds*  
[Annals of Mathematics](#) (2016) vol. 183, 681–713
- *Semisimplicity and rigidity of the Kontsevich–Zorich cocycle*  
[Inventiones Mathematicae](#) (2016) vol. 205, 617–670

### Preprints

- *Kummer rigidity for K3 surface automorphisms via Ricci-flat metrics* [arXiv:1808.08673](https://arxiv.org/abs/1808.08673)  
(with V. Tosatti) Submitted, American Journal of Mathematics

## FELLOWSHIPS AND PRIZES

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- **1st Dynamical Systems Prize for young mathematicians (2016)**  
Awarded by the Center for Dynamics and Geometry at Penn State
- **Clay Research Fellowship (2016-2021)** Awarded by the Clay Mathematics Institute
- **Junior Fellowship (2016-2019)** Awarded by the Society of Fellows at Harvard University
- *At the University of Chicago:*  
**Harper Dissertation Fellowship (2015)** *The highest university honor for final year PhD students*  
**Izaak Wirszup memorial prize (2014)** *For excellence in research*  
**Lawrence and Josephine Graves Teaching Prize (2014)** *For effective and responsible teaching*  
**McCormick Scholarship (2010-2012)** *For incoming graduate students*
- *At the University of Cambridge:*  
**Trinity College Mathematics Studentship & Trinity College Travel Grant (2009-2010)**
- *At Princeton University:*  
**George B. Wood Junior Legacy prize (2009)** *To a senior in recognition of exceptional achievement during junior year*  
**Andrew H. Brown Prize (2008)** *Mathematics Department, for exceptional work during junior year*  
**Shapiro Prize for Academic Excellence (2007)** *For outstanding work during sophomore year*

## TEACHING EXPERIENCE

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### Harvard University

2018 Spring GRADUATE COURSE “DYNAMICS AND RIGIDITY” MATH 253

### University of Chicago

2014 LAWRENCE AND JOSEPHINE GRAVES PRIZE  
*For effective and responsible teaching*

2016 Spring INSTRUCTOR, LINEAR ALGEBRA MATH 196

2015 Fall INSTRUCTOR, LINEAR ALGEBRA MATH 196

2014 - 2015 CO-INSTRUCTOR, HONORS CALCULUS MATH 161, 162, 163  
*Inquiry Based Learning (Moore’s Method)*

2014 Spring TA FOR THREE COURSES IN THE UCHICAGO PARIS PROGRAM

2014 Winter INSTRUCTOR, LINEAR ALGEBRA MATH 196

2013 Fall INSTRUCTOR, MULTIVARIABLE CALCULUS MATH 195

2012 - 2013 INSTRUCTOR, CALCULUS MATH 151, 152, 153

2011 - 2012 TA, HONORS ANALYSIS IN  $\mathbb{R}^n$  MATH 207, 208, 209

## SERVICE

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JOURNAL REFEREE & QUICK OPINION Inventiones Mathematicae, JAMS, Duke Math Journal, Compositio Mathematica, Crelle, Geometry & Topology, IMRN, Journal of Modern Dynamics, Israel Journal of Math, Conformal Geometry & Dynamics, New York Journal of Math, SIGMA

PHD COMMITTEES Eduard Duryev (Harvard, 2018), Charles Fougerson (Paris Diderot, 2017)

MENTORING AND SEMINARS Mentor, Directed Reading Program for undergraduates (UChicago, Winter 2014)  
Mentor, Upward Bound Program for high school students (UChicago, Fall 2014)  
Panelist, “Teaching in the College” workshop (UChicago, Fall 2014)

Organizer, student seminars on “Applications of Ratner’s theorems” (UChicago, Fall 2014) and “Random Walks on Groups” (UChicago, Winter 2015)

## INVITED TALKS AND LECTURE SERIES

	<b>Colloquia &amp; Schools</b>	
2019/02	University of Chicago, USA	Colloquium
2019/01	Harvard Univ, USA	Colloquium
2019/01	Stanford Univ, USA	Colloquium
2019/01	Berkeley Univ, USA	Colloquium
2018/12	Northwestern Univ, USA	Colloquium
2018/10	CalTech, USA	Colloquium
2018/03	Yale Univ, USA	Colloquium
2017/11	Indiana Univ, USA	Colloquium
2017/09	Tufts Univ, USA	Colloquium
2017/03	Rice Univ, USA	Colloquium
2019/07	Beijing, China	8 lectures, Summer School on Modern Dynamics
2018/06	Grenoble, France	3 lectures, Summer School on Teichmüller theory
2016/07	ICTP, Trieste, Italy	4 lectures, Summer School on Geometry and Dynamics
2016/05	Moscow, Russia	3 lectures, School on Hyperbolicity and Dynamics
2015/06	CIRM, Luminy, France	3 lectures, Summer School “Flat surfaces”
2015/01	Ilhabela, Brazil	3 lectures, Summer School “Holomorphic Dynamics”
	<b>Conference talks</b>	
2019/05	Cetraro, Italy	Conference in honor of Yves Benoist
2019/05	Schloss Elmau, Germany	Simons Symposium: Algebraic, Complex and Arithmetic Dynamics
2018/11	Fields Institute, Canada	Symposium in memory of Maryam Mirzakhani
2018/10	Fields Institute, Canada	Translation Surfaces Workshop
2018/09	Oberwolfach, Germany	Workshop “Flat Surfaces and Algebraic Curves”
2018/03	Maryland, USA	Bill Veech Memorial Conference
2017/08	Maryland, USA	Maryland Analysis & Geometry Atelier
2017/08	Stonybrook, USA	Hodge Theory, Moduli & Representation Theory
2017/08	Stanford, USA	GEAR Senior Retreat
2017/03	Fields Institute, Canada	Workshop on Algebraic Varieties
2017/02	CIRM, Luminy, France	Conference “Espace de Teichmüller”
2016/08	ICERM, Providence, USA	Workshop “Cycles on Moduli Spaces, GIT, and Dynamics”
2016/06	Paris, France	Conference in honor of G. Margulis, 70 years anniversary
2016/05	Oaxaca, Mexico	Workshop “Flat Surfaces and Dynamics in Moduli Space”
2015/09	Oxford, UK	Clay Workshop “Geometry and Dynamics on Moduli Spaces”
2015/07	CIRM, Luminy, France	Conference “Dynamics and Geometry in Teichmüller Space”
2015/06	MPIM, Bonn, Germany	Arbeitstagung
2015/01	Ilhabela, Brazil	Conference “Hyperbolicity in Algebraic Geometry”
2014/11	Bordeaux, France	Conference “Paroles aux jeunes chercheurs”
2014/08	Daejong, South Korea	ICM satellite conference “Geometry and Groups”
2014/03	Oberwolfach, Germany	Workshop “Flat Surfaces and Dynamics on Moduli Space”
2013/11	ICERM, Providence, USA	Workshop on Geometric Structures in Dynamics
2013/09	Ventotene, Italy	Conference on Geometric and Analytic Group Theory
2013/06	Morelia, Mexico	International Conference on Surfaces of Infinite Type
	<b>Seminar Talks</b>	
2019/06	IHP, Paris	Institut Henri Poincaré, Séminaire “Surfaces Plates”
2018/10	Univ. of Maryland, USA	Dynamics Seminar
2018/10	IAS, Princeton, USA	Informal Dynamics Seminar
2018/06	IHP, Paris	Institut Henri Poincaré, Séminaire “Surfaces Plates”
2018/02	Harvard Univ, USA	Informal Geometry and Dynamics Seminar
2017/11	Northeastern Univ, USA	Geometry, Physics, and Representation Theory Seminar
2017/11	IAS, Princeton, USA	Analysis seminar
2017/11	Indiana Univ, USA	Geometry & Dynamics seminar
2017/10	Columbia Univ, USA	Symplectic Geometry & Gauge Theory Seminar

2017/06	IHP, Paris	Institut Henri Poincaré, Séminaire “Surfaces Plates”
2017/04	Princeton Univ, USA	Ergodic Theory Seminar
2017/04	IAS, Princeton, USA	Analysis and Mathematical Physics Seminar
2017/04	Stonybrook Univ., USA	Algebraic Geometry Seminar
2017/03	Northwestern Univ, USA	Dynamics Seminar
2016/12	Boston College, USA	Geometry & Topology Seminar
2016/11	Harvard Univ, USA	Informal Geometry and Dynamics Seminar
2016/11	Yale Univ, USA	Geometry & Topology Seminar
2016/10	UIUC, USA	GEAR Seminar
2016/09	Cambridge, USA	Harvard/MIT Algebraic Geometry Seminar
2016/04	Caltech, USA	Geometry & Topology Seminar
2016/04	Univ. of Michigan	Geometry Seminar
2016/04	Marseille, France	Séminaire Teich
2016/03	Orsay, France	Geometry, Topology & Dynamics Seminar
2016/03	Cambridge, UK	Geometry and Topology Seminar
2016/02	IHP, Paris	Institut Henri Poincaré, Séminaire “Surfaces Plates”
2016/01	Grenoble, France	Séminaire d’Algèbre et Géométries
2015/05	MSRI, Berkeley, USA	Homogeneous Dynamics Program seminar
2015/04	Stanford Univ, USA	Algebraic Geometry seminar
2015/04	Northwestern Univ, USA	Dynamical Systems seminar
2015/04	Harvard Univ, USA	Geometry and Dynamics seminar
2015/03	Courant Inst, NYU, USA	Algebraic Geometry seminar
2015/02	Univ. of Chicago, USA	Number Theory seminar
2015/02	Penn State, USA	Dynamical Systems seminar
2014/11	Jussieu, Paris, France	Séminaire de Théorie Ergodique
2014/06	Grenoble, France	Séminaire d’Algèbre et Géométries
2014/06	Marseille, France	Séminaire Teich
2014/04	IHP, Paris, France	Institut Henri Poincaré, Séminaire “Surfaces Plates”
2014/02	Univ. of Maryland, USA	Dynamical Systems seminar
2013/12	Univ. of Utah, USA	Max Dehn seminar
2013/10	UIUC, USA	Ergodic Theory seminar