



## Curriculum vitae

### PERSONAL INFORMATION

---

Name Ionel Popescu  
Address Bucharest  
Phone +40771258055  
email ioionel@gmail.com

### EMPLOYMENT

---

Faculty of Mathematics,  
University of Bucharest 2017-present, professor,  
2014-2017, associate professor

Institute of Mathematics of the  
Romanian Academy 2017-present, CS I (equivalent to professor),  
2014-2017, CS II (equivalent to associate professor)  
2006-2014, CS III (scientific researcher),  
2997-2014, assistant researcher

School of Mathematics,  
Georgia Institute of Technology 2016-2020 associate professor  
2007-2016, assistant professor

Department of Mathematics,  
Northwestern University 2004-2007, Boas assistant professor

### EDUCATION AND TRAINING

---

MIT 2000-2004, PhD in Pure Mathematics  
Thesis: Morse Inequalities, a Probabilistic Approach

University of Bucharest 1997-1998, Master of Science in Mathematics  
1991-1997, Bachelor of Science in Mathematics

### PROFESSIONAL

---

Interests I am a probabilist with interest in analysis at large, differential geometry, random matrices, free probability and more recently machine learning.

Fellowships and Awards Romanian academy award 2011  
CURRY fellowship, The Pennsylvania State University, Fall 1999  
TEMPUS fellowship, Heidelberg, Germany, Spring 1998  
First place in Romanian National Olympiad, 1991

Grants Simons foundation collaboration grant 2014-2019  
European Union - Marie Curie grant (IRG) - *Stochastic Analysis, Mass Transportation and Free Probability*, 2010-2013,  
UEFISCDI - Romanian Young Researchers - *Randomness, Geometric Problems and Functional Inequalities*, 2011-2014. This is a team grant I managed.  
UEFISCDI - Exploratory Workshop - *Probability and Related Aspects*, May 2012, Alba Iulia, Romania. I was the co-PI and the co-organizer of the workshop.

## Selected publications

- Ionel Popescu. Free functional inequalities on the circle. *Advances in Mathematics*, 330:1101–1159, 2018. preprint, arXiv:1511.05274
- Jun Tao Duan, Heinrich Matzinger, and Ionel Popescu. Non-normal limiting distribution for optimal alignment scores of strings in binary alphabets. *Journal of Statistical Physics*, 168(5):1056–1084, 2017
- Mihai N Pascu and Ionel Popescu. Shy and fixed-distance couplings of brownian motions on manifolds. *Stochastic Processes and their Applications*, 126(2):628–650, 2016
- Robert W Neel, Ionel Popescu, et al. A stochastic target approach to ricci flow on surfaces. *The Annals of Probability*, 44(2):1341–1425, 2016
- Stavros Garoufalidis and Ionel Popescu. Analyticity of the planar limit of a matrix model. In *Annales Henri Poincaré*, volume 14, pages 499–565. Springer, 2013
- Michel Ledoux and Ionel Popescu. Mass transportation proofs of free functional inequalities, and free poincaré inequalities. *Journal of Functional Analysis*, 257(4):1175–1221, 2009
- Ionel Popescu. General tridiagonal random matrix models, limiting distributions and fluctuations. *Probability theory and related fields*, 144(1-2):179–220, 2009
- Ionel Popescu. Morse inequalities, a function space integral approach. *Journal of Functional Analysis*, 235(1):1–68, 2006

## Reviewer

Annals of Statistics; Bernoulli; Electronic Journal of Probability; Electronic Journal of Statistics; Extremes; Journal of Fourier Analysis and Applications; Journal of Operator Theory; Potential Analysis; Probability Theory and Related Fields; Theoretical Journal of Probability

## Conferences organized

Colloque Franco-Roumain en Théorie des Probabilités- Bucharest, Oct. 30-Nov 1st, 2015.  
Romanian Congress of Mathematicians, Jun. 26th-Jul. 1st, 2015, - special session on Probability  
Joint International Meeting of the AMS and the Romanian Mathematical Society, June 2013 - special session on Random Matrices and Free Probability  
Probability and Related Aspects, May 22 - 26, 2012, Alba Iulia, Romania  
Mini Conference on Probability and related fields, May 23-24, 2011, Bucharest, Romania

## Invited Conferences

Joint DMVRMS, GermanRomanian conference, Constanta, Sept. 16–19, 2017, FrenchRomanian atelier du travail, Bucharest, Sept. 13–14, 2017, Stochastic analysis on metric spaces, Sept. 48, 2017, ProbaGeo, Luxembourg, July 9–14, 2017, FrenchRomanian Colloquium, Iași, 25–29 August 2016, Probabilistic and Analytic tools in Convexity, AMS, March 56, Athens Georgia, 2016, Miniworkshop in free probability, Tokyo, July 13–17, 2015, New Trends in Stochastic Analysis, Kyoto, July 6–10, 2015, New developments in Optimal Transport, Geometry and Analysis, Bonn, Feb 24th, 2015, Stochastic Analysis and Applications, Bucharest, Dec. 17th, 2014, ProbaGeo 2014 at Bordeaux, June 10-12, 2014, High Dimensional Probability VII, Cargese, May 26–31, 2014, Sectional AMS meeting, Albuquerque, April 56, 2014, ProbaGeo 2013 at Luxembourg, Oct 28–31, 2013, University of Luxembourg, 150 years anniversary of University of Bucharest, Aug. 30 Sept. 1, 2013, Bucharest, Romania, AMSRMS, Probability and Other Related Fields, June 27–30 2013, Alba Iulia, Romania, Stochastic Differential Geometry, May 29–31 2013, Rennes, France, Heat Kernels, Stochastic Processes and Functional Inequalities, 511 May, 2013, Oberwolfach Germany, The 13th RomanianFinnish Seminar, June 26–30, 2012, Ploiești, Romania, Probability and Related Aspects, Alba Iulia, Romania, May 22–26, 2012, New Trends in Modern Analysis, Probabilistic and Analytic Methods in PDEs and Spectral Theory November 2014, Hammamet, Tunisia, 5th International Conference on Stochastic Analysis and its Applications September 59, 2011, Bonn, Germany, Congress of Romanian Mathematicians, June 29 July 5, 2011, Brasov, Romania, Mini Conference on Probability and Related Fields, May 23–24, 2011, Bucharest, Romania, Workshop for Young Researchers in Mathematics May 12-13, 2011, Constanta, Romania, The Fourth Annual Meeting of the European Non Commutative Geometry Network April 25–30, 2011, Bucharest, Romania, Conference on Random Matrices, June 14, 2010, Paris, Probability & Geometry in High Dimensions, May 17–21, 2010, Paris, Workshop on Asymptotic Analysis and Stochastic Methods for Heterogeneous Media, June 9–13, 2010, Alba Iulia, Romania, CMS/AMS Winter Session Ottawa December 5–8, 2008, Infinite Dimensional Probability Luminy, May 22–27, 2008, Workshop on Random Matrices, Bonn, January 11–18, 2008, International Workshop on “Free Probabilities, Operator Spaces and von Neumann Algebras”, Sibiu, Romania, June 9-16, 2007, 6th Operator Algebras International Conference, Bucharest, August 2005, Joint meeting AMS-DMS6, June 13–18, 2005, Mainz, Germany, AMS Meeting, October 23–24, 2004 at Northwestern University in Evanston, Illinois, Analytic and Geometric Aspects of Stochastic Processes, Banff Research Center, April 10-15, 2004,

## Seminar Talks

Alan Turing, London, Dec. 6th, 2017; Imperial College, London, Dec. 5th, 2017; MIT, April 3rd, 2017; University of Luxembourg, Feb 12th, 2015; Georgia Tech, Sept. 25th, 2014; IMAR, May 20th, 27th and June 3rd, 2013; Bonn University, June 9th, 2013; Northwestern University, Dec 9th, 2012; Lehigh Univ, September 20th, 2012; Purdue University, April 3rd 2012; Notre Dame University, March 1st, 2012; Northwestern University, February 20th, 2012; Constanta, November 11th 2011, Toulouse University, May, 2010; Probability Seminar, MIT, November 9th, 2009; Texas AM Oct. 6th, 2009; Probability Seminar, Colorado Boulder, Sept. 10th 2009; Probability Seminar, MIT, May 5th, 2009; Stochastic Seminar, Georgia Tech, October 9, 2008; Toulouse, June 26, 2008; Georgia Tech, September 27, 2007; Columbia University, February 9, 2007; Institute for Applied Math, University of Bonn, June 11, 2005; Northwestern University, October 18, 2004; Northwestern University, January 29, 2004; Northeastern University, Boston, January 12, 2004; MIT, November 26, 2003; Heidelberg, Spring 1998; Operator Algebras Seminar, Institute of Mathematics of Romanian Academy, Series of Lectures on "Free Probability Theory", Fall 1998

# List of Publications

## Ionel POPESCU

---

- (18) J. Chen, Z. Dai, J. Duan, Q. Hu, R. Li, H. Matzinger, I. Popescu, and H. Zhai. A cost-reducing partial labeling estimator in text classification problem. In *Future of Information and Communication Conference*, pages 494–511. Springer, Cham, 2020
- (17) J. Chen, Z. Dai, J. Duan, H. Matzinger, and I. Popescu. Naive bayes with correlation factor for text classification problem. In *2019 18th IEEE International Conference On Machine Learning And Applications (ICMLA)*, pages 1051–1056. IEEE, 2019
- (16) J. Chen, Z. Dai, J. Duan, H. Matzinger, and I. Popescu. Improved naive bayes with optimal correlation factor for text classification. *SN Applied Sciences*, 1(9):1–10, 2019
- (15) R. Hauser, H. Matzinger, I. Popescu, et al. An upper bound on the convergence rate of a second functional in optimal sequence alignment. *Bernoulli*, 24(2):971–992, 2018
- (14) J. T. Duan, H. Matzinger, and I. Popescu. Non-normal limiting distribution for optimal alignment scores of strings in binary alphabets. *Journal of Statistical Physics*, 168(5):1056–1084, 2017
- (13) M. N. Pascu and I. Popescu. Couplings of brownian motions of deterministic distance in model spaces of constant curvature. *Journal of Theoretical Probability*, pages 1–27, 2017
- (12) M. N. Pascu and I. Popescu. Shy and fixed-distance couplings of brownian motions on manifolds. *Stochastic Processes and their Applications*, 126(2):628–650, 2016
- (11) R. W. Neel, I. Popescu, et al. A stochastic target approach to ricci flow on surfaces. *The Annals of Probability*, 44(2):1341–1425, 2016
- (10) C. Houdre and I. Popescu. Refinements of the one dimensional free poincaré inequality. *International Mathematics Reseach Notices*, 17:8116–8151, 2015
- (9) I. Popescu. A refinement of the brascamp–lieb–poincaré inequality in one dimension. *Comptes Rendus Mathematique*, 352(1):55–58, 2014
- (8) I. Popescu. Local functional inequalities in one-dimensional free probability. *Journal of Functional Analysis*, 264(6):1456–1479, 2013
- (7) M. Ledoux and I. Popescu. The one dimensional free poincaré inequality. *Transactions of the American Mathematical Society*, 365(9):4811–4849, 2013
- (6) S. Garoufalidis and I. Popescu. Analyticity of the planar limit of a matrix model. In *Annales Henri Poincaré*, volume 14, pages 499–565. Springer, 2013
- (5) I. Popescu and I. Popescu. Toeplitz algebras arising from actions of nr. *REV. ROUMAINE MATH. PURES APPL*, 55(3):205–240, 2010
- (4) M. Ledoux and I. Popescu. Mass transportation proofs of free functional inequalities, and free poincaré inequalities. *Journal of Functional Analysis*, 257(4):1175–1221, 2009
- (3) I. Popescu. General tridiagonal random matrix models, limiting distributions and fluctuations. *Probability theory and related fields*, 144(1-2):179–220, 2009
- (2) I. Popescu. Talagrand inequality for the semicircular law and energy of the eigenvalues of beta ensembles. *Mathematical Research Letters*, 14:1023–1032, 2007
- (1) I. Popescu. Morse inequalities, a function space integral approach. *Journal of Functional Analysis*, 235(1):1–68, 2006

### Preprints

- (9) J. Duan and I. Popescu. Locov: low dimension covariance voting algorithm for portfolio optimization. *arXiv preprint arXiv:2204.00204*, 2022
- (8) M. Petrica and I. Popescu. A dynamical estimation and prediction for covid19 on romania using ensemble neural networks. *arXiv preprint arXiv:2203.00407*, 2022
- (7) I. Popescu and T. Vaidya. Averaging plus learning in financial markets. *arXiv preprint arXiv:1904.08131*, 2019
- (6) J. Duan, I. Popescu, and H. Matzinger. Recover the spectrum of covariance matrix: a non-asymptotic iterative method. *arXiv preprint arXiv:2201.00230*, 2022
- (5) J. Duan, I. Popescu, and F. Zhou. An invariance principle of random projection. *arXiv preprint arXiv:2106.14825*, 2021
- (4) R. D. Stochițoiu, M. Petrica, T. Rebedea, I. Popescu, and M. Leordeanu. A self-supervised neural-analytic method to predict the evolution of covid-19 in romania. *arXiv preprint arXiv:2006.12926*, 2020

- (3) M. Petrica, R. D. Stochitoiu, M. Leordeanu, and I. Popescu. A regime switching on covid19 analysis and prediction in romania. *arXiv preprint arXiv:2007.13494*, 2020
- (2) J. Duan, I. Popescu, and F. Zhou. Central limit theorem for product of dependent random variables. *arXiv e-prints*, pages arXiv–2106, 2021
- (1) Z. Dai, H. Matzinger, and I. Popescu. An analytical formula for spectrum reconstruction. *arXiv preprint arXiv:2006.00152*, 2020