

Curriculum Vitae: Carlos Vargas

Personal Information

Date and place of Birth: 14 August, 1986, Zapopan, México
Nationality: Mexican.
E-mail: obieta@gmail.com
Personal Webpage: <https://carlos-vargas-math.github.io/>

Post-graduate positions

10.2015-08.2020. CONACYT-CIMAT.
Description: Research and teaching position from CONACYT at CIMAT, Guanajuato.
Project Title: “TDA for Mathematics and its Applications”

02.2015-06.2015. TU Graz,
Description: Project assistant of Prof. Dr. Franz Lehner (postdoc).

Education

2010-2015. Doktor der Naturwissenschaften.
Universität des Saarlandes.

Thesis: “Free probability: Deterministic Equivalents and Combinatorics”
Advisor: Prof. Dr. Roland Speicher.
Honors: Magna Cum Laude.
Date of Colloquium: 05.05.2015.

2009-2010. Master of Science
Mathematics and Statistics.
Queen's University, Canada.

2004-2009. Bachelor's Degree in Mathematics (Licenciado en Matemáticas)
Universidad de Guanajuato. Gto. Mexico

Research Interests

Non-commutative probability, free probability, large random matrices, cumulants, boolean probability, non-commutative conditional expectations.

Algebraic combinatorics, posets, lattices, incidence algebras, Möbius inversions.

Large random graphs, large random topological spaces, topological and geometrical data analysis.

Organization of Events

01.2020 6th School and Winter Workshop on Geometric and Topological Data Analysis
(with A. Martín del Campo and A. Rieser)

- 11.2018 5th. School on Topological Data Analysis
(with A. Martín del Campo and A. Rieser)
CIMAT, Guanajuato, Mexico.
- 12.2017 Simposio de Probabilidad y Procesos Estocásticos
(with S. López and A. Rocha-Arteaga).
Faculty of Science, UNAM. CDMX.
- 09.2017 Homotopy Probability Theory (ERC Mini-workshop).
(with R. Friedrich).
Universität des Saarlandes.
- 03.2017 XV School on Probability and Statistics
(with E. Diaz-Francés and J.C. Pardo)
CIMAT

List of main publications

- Free Deterministic Equivalents, rectangular random matrix models and operator-valued free probability (with R. Speicher) *Random Matrices: Theory and Applications*, 1, (2012)
- Products of free random variables and k-divisible non-crossing partitions (with O. Arizmendi) *Electronic Communications in Probability*, 17, (2012)
- Analytic subordination theory of operator-valued free multiplicative convolutions and applications to random matrix theory (with S. Belinschi, R. Speicher and J. Treilhard). *International Mathematical Research Notices*. (2014)
- Relations between cumulants in non-commutative probability (with O. Arizmendi, T. Hasebe, and F. Lehner). *Advances in Mathematics*, vol. 282, 10, (2015).
- Norm convergence in Non-Commutative Central Limit Theorems: Combinatorial Approach. (with O. Arizmendi). *Contemporary Mathematics (AMS)*, vol. 657, (2016).
- On the asymptotic distribution of block-modified random matrices. (with O. Arizmendi and I. Nechita) *Journal of Math. Phys.* 57, (2016).
- A general solution to (free) deterministic equivalents. *Contemporary Mathematics (AMS)* vol. 701, pp 28, (2018).
- Subordination methods for free deconvolutions (with O. Arizmendi and P. Tarrago). *Annales de l'Institut Henri Poincaré, Probabilités et Statistiques*, Vol 56, 4, pp 2565-2594 (2020).

Language Proficiency:

Spanish (native).
English (fluent).
German (intermediate).