

Alma Saraí Hernández-Torres

Instituto de Matemáticas, UNAM
www.saraiht.com

August 2022
saraiht@im.unam.mx

RESEARCH INTERESTS

Discrete Probability: uniform spanning forests, loop-erased random walks, growth processes, random walks, random trees, percolation models with long-range correlations, and their scaling limits.

ACADEMIC POSITIONS

- July 2022 – *present* INVESTIGADORA ASOCIADA C
**Instituto de Matemáticas,
Universidad Nacional Autónoma de México (UNAM)**
Ciudad de México, México
- Oct. 2020 – June 2022 POSTDOCTORAL FELLOW
Technion – Israel Institute of Technology, Haifa, Israel
Hosts: [Prof. Eviatar Procaccia](#) and [Prof. Ron Rosenthal](#)

EDUCATION

- 2020 Ph.D. in MATHEMATICS
University of British Columbia, Vancouver, Canada
Thesis: “A Macroscopic View on Two Discrete Random Processes”
Supervisors: [Prof. Omer Angel](#) and [Prof. Martin Barlow](#)
- 2016 M.Sc. in MATHEMATICS
University of British Columbia, Vancouver, Canada
Essay: “Collisions of Trajectories and Random Walks”
Supervisor: [Prof. Martin Barlow](#)
- 2014 B.Sc. in MATHEMATICS
**Universidad de Guanajuato -
Centro de Investigación en Matemáticas (CIMAT)**, Guanajuato, Mexico
Thesis: “Introducción a los Espacios de Bergman”
Supervisor: [Prof. Fernando Galaz Fuentes](#)

PUBLICATIONS & PREPRINTS

4. *The chemical distance in random interlacements in the low-intensity regime*, with E. B. Procaccia and R. Rosenthal. Preprint. arXiv e-print: [2112.13390](https://arxiv.org/abs/2112.13390).
3. *Scaling limit of the three-dimensional dimensional uniform spanning tree and the associated random walk*, with O. Angel, D. A. Croydon and D. Shiraishi. **Annals of Probability**, Volume 49, Number 6 (November 2021), 3032–3105. DOI: [10.1214/21-AOP1523](https://doi.org/10.1214/21-AOP1523). arXiv e-print: [2003.09055](https://arxiv.org/abs/2003.09055).

2. *The number of spanning clusters of the uniform spanning tree in three dimensions*, with O. Angel, D. A. Croydon and D. Shiraishi. **Advanced Studies in Pure Mathematics**, 2021: 403-414 (2021) (Stochastic Analysis, Random Fields and Integrable Probability – Fukuoka 2019. Vol. 87). DOI: [10.2969/aspm/08710403](https://doi.org/10.2969/aspm/08710403). arXiv e-print: [2003.04548](https://arxiv.org/abs/2003.04548).
1. *Chase-escape with death on trees*, with E. Beckman, K. Cook, N. Eikmeier and M. Junge. **Annals of Probability**, Volume 49, Number 5 (September 2021), 2530–2547. DOI: [10.1214/21-AOP1514](https://doi.org/10.1214/21-AOP1514). arXiv e-print: [1909.01722](https://arxiv.org/abs/1909.01722).

SELECTED DISTINCTIONS, SCHOLARSHIPS AND AWARDS

2022–present	Candidate Member of the Mexican National System of Researchers, (Sistema Nacional de Investigadores, SNI) Consejo Nacional de Ciencia y Tecnología (Conacyt)
2015–2020	Scholarship for Graduate Studies Consejo Nacional de Ciencia y Tecnología (Conacyt)
2014	Faculty of Science Graduate Award Scholarship for Graduate Studies, University of British Columbia
2009–2014	Scholarship for Undergraduate Studies Centro de Investigación en Matemáticas (CIMAT)
2012, 2014	Academic Excellence Scholarship Secretaría de Educación Pública (SEP)
2012	Academic Excellence Scholarship Universidad de Guanajuato
2008	Bronze Medal XXII Olimpiada Mexicana de Matemáticas (Mexican Mathematical Olympiad)

TALKS

Research talks (conferences and seminars)

- | | |
|------|--|
| 2022 | Special session “Random Trees and Graphs”, 42nd SPA Conference, China ◊*
Probability Seminar, University of Cambridge, UK
Probability Seminar, Technische Universität München, Germany
Percolation Today ◊
Probability Seminar, Peking University, China ◊ |
| 2021 | GFAP Seminar, Weizmann Institute of Science, Israel
Technion Probability Seminar, Technion – I.I.T., Israel
Seminario de Probabilidad Hispanohablante ◊
Purdue Probability Seminar, Purdue University, USA ◊
LXX Reunión de Comunicaciones Científicas,
Reunión Anual de la Unión Matemática Argentina, Argentina ◊*
Special Session on Interacting Stochastic Systems, MCA, Argentina ◊*
Probability Seminar Essen, Universität Duisburg-Essen, Germany ◊
Workshop discussion, SPDEs & friends (15 min. talk) ◊*
8th Students Probability Day, Weizmann Institute of Science, Israel
Probability Seminar, Cornell University, USA ◊
Probability and Combinatorics Seminar, Uppsala universitet, Sweden ◊
Probability Seminar of Americas ◊
Joint Israeli Probability Seminar, Israel ◊ |
| 2020 | Probability and Related Fields Seminar, Indiana University, USA ◊
UBC Probability Seminar, University of British Columbia, Canada ◊
Probability and Related Fields Seminar, Indiana University, USA ◊
Seminario de Probabilidad y Estadística, CIMAT, Mexico ◊
Seminario de Probabilidad y Procesos Estocásticos, UNAM, Mexico ◊
TAMU Probability Seminar, Texas A&M University, USA |

- AMS Special Session on Stochastic Spatial Models, JMM, Denver, USA *
- 2019 Latin American Congress of Probability and Mathematical Statistics, Merida, Mexico
- UBC Probability Seminar, University of British Columbia, Canada
- Dynamics Seminar, University of Victoria, Canada
- 49th Saint-Flour Probability Summer School, Saint-Flour, France
- 11th Cornell Probability Summer School, Cornell University, USA
- CMS Summer Meeting, University of Regina, Canada *
- 2018 Retreat for Young Researchers in Stochastics, BIRS, Canada *

Colloquia

- May 2022 Coloquio Queretano, Instituto de Matemáticas, Unidad Juriquilla, UNAM, Mexico ◊
- Feb. 2022 Seminario Virtual de Matemáticas, Universidad de Colima, Mexico ◊
- Dec. 2021 Matemáticos Mexicanos en el Mundo, Casa Matemática Oaxaca, Mexico ◊*
- Feb. 2021 Coloquio de Exalumnos de CIMAT/DEMAT, CIMAT, Mexico ◊
- Nov. 2020 Coloquio Oaxaqueño de Matemáticas, IM-UNAM Oaxaca, Mexico ◊

Mini-courses

- July 2022 *“From random walks to metric spaces”*
Graduate Student Concentration Week on Metric Geometry
Texas A&M Workshop in Analysis and Probability, USA
- July 2022 *“Teoremas de la forma en probabilidad”*
Geometría Prohibida, Universidad Autónoma de San Luis Potosí, Mexico

Expository talks

- Aug. 2022 Coloquio de Orientación Matemática, Ciencias TV, UNAM, Mexico ◊
- June 2022 Pizza Seminar, Technion – Israel Institute of Technology, Israel
- April 2021 XIX Escuela de Probabilidad y Estadística, CIMAT, Mexico ◊ *
- Dec. 2020 Fest 2020, Independently Organized Conference ◊
- Sep. 2020 Seminario Junior de Estudiantes, Universidad de Guanajuato, Mexico ◊
- Sep. 2020 Lunch & Learn, Trinity Western University, Canada ◊
- Mar. 2019 Graduate Student Seminar, University of British Columbia, Canada

An asterisk (*) indicates an invited talk.

A diamond (◊) indicates a talk online.

The supplemental information shows a comprehensive list of [events attended](#).

TEACHING

Teaching Experience

Facultad de Ciencias, UNAM,

Ciudad de México, Mexico

- | | |
|------|---|
| 2022 | <i>Instructor</i>
Probabilidad I (Probability I) |
|------|---|

University of British Columbia,

Vancouver, Canada

- | | |
|------|--|
| 2019 | <i>Workshop facilitator</i>
Math 100: Differential Calculus with Applications to Physical Sciences and Engineering (Vantage College)
Workshop sessions for international students, 2 hours per week. |
|------|--|

2018	<p><i>Recitation instructor</i></p> <p>Math 180: Differential Calculus with Physical Applications Workshop sessions with theory and exercises, 2 hours per week.</p>
2017	<p><i>Course instructor</i></p> <p>Math 100: Differential Calculus with Applications to Physical Sciences and Engineering Course with 60 students, 3 hours per week.</p>
2014– 2020	<p><i>Teaching assistant</i></p> <p>Marked assignments and conducted tutorial sessions. Undergraduate course assisted: Mathematical Game Theory (Math 344), Real Variables I (Math 320), Probability with Physical Applications (Math 318), Introduction to Probability (Math 302), Introduction to Complex Variables (Math 300), Differential Equations (Math 256), Multivariable Calculus (Math 253), Mathematical Proof (Math 220), Differential Calculus with Applications to Life Sciences (Math 102).</p> <p>Tutor at the Math Learning Centre Drop-in tutorials offered to undergraduate students.</p>

**Universidad de Guanajuato / Centro de Investigación en Matemáticas (CIMAT),
Guanajuato, Mexico**

2012– 2014	<p><i>Teaching assistant</i></p> <p>Marker</p> <p>Conducted tutorial sessions for Modern Algebra I, Complex Variables and Integral and Differential Calculus I & II.</p>
2013	<p><i>Workshop Instructor</i></p> <p>X Calculus Problem Solving Workshop Led a group of undergraduates for a week-long problem-solving workshop on calculus.</p>

Teaching Accreditation

2018	Instructional Skills Workshop (24 hours workshop), UBC
2016	Math 599: Mathematics Teaching Techniques (33 hours course), UBC

ACADEMIC SERVICE

2022	Co-organizer , Sesión de Probabilidad (Probability Session), Congreso Nacional SMM
Aug. 2022 – presente	Co-organizer , Seminario de Probabilidad y Procesos Estocásticos
July 2022 – presente	Co-organizer , Coloquio de Ex-estudiantes CIMAT/DEMAT
July-Aug. 2021	Co-organizer , Open Online Probability School Organizational work for 10 mini-courses.
May 2021	Teaching assistant , Mathematics Sin Fronteras Supported the mini-course “An introduction to error correcting codes”.
Dec. 2020	Co-organizer , Fest 2020 Organizational work for 10 talks and 1 mini-course.
May-Aug. 2020	Co-organizer , Open Online Probability School Event conception and organizational work. 13 mini-courses and 13 talks.
June 2017	Short talks organizer , PIMS-CRM Summer School in Probability Scheduled 29 short talks for a one-month summer school, assisted in communication with the participants and organization of social activities.
2016 – 2018	Organizer , UBC Probability Reading Group Organized schedule and suggested topics.

Referee for Stochastic Processes and their Applications
Random Structures and Algorithms
Electronic Communications in Probability
Electronic Journal of Probability
Communications in Mathematical Physics
Journal of Theoretical Probability

LANGUAGES

SPANISH: Native
ENGLISH: Fluent

PROFESSIONAL AFFILIATIONS

Sociedad Matemática Mexicana (SMM)
Sociedad Latinoamericana de Probabilidad y Estadística Matemática (SLAPEM)
Bernoulli Society (BS)

Supplemental information

EVENTS

Workshops and Summer Schools

- May-June 2021 [CRM-PIMS Summer School in Probability](#)
Online summer school organized in Canada
- June 2021 [SPDEs & friends](#)
3-day online workshop organized in Berlin, Germany
- July 2019 [49th Saint-Flour Probability Summer School](#)
Saint-Flour, France
- June 2019 [11th Cornell Probability Summer School](#)
Cornell University, Ithaca, USA
- June 2019 [Mathematical Research Communities: Stochastic Spatial Models](#)
Rhode Island, USA
- June 2018 [Challenges in Probability and Mathematical Physics](#)
Centre de Recherches Mathématiques (CRM), Montreal, Canada
- Aug. 2017 [Summer School in Graph Limits, Groups and Stochastic Processes](#)
MTA Alfréd Rényi Institute of Mathematics, Budapest, Hungary
- June 2017 [PIMS-CRM Summer School in Probability](#)
University of British Columbia, Vancouver, Canada
- June-July 2015 [CRM-PIMS Summer School in Probability](#)
McGill University, Montreal, Canada
- Mar. 2014 [XII School in Probability and Statistics](#)
Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico
- July 2011 [IV Summer Program in Probability and Statistics](#)
Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico
Research internship with Prof. José Alfredo López-Mimbela

Conferences and Meetings

- Dec. 2021 [Matemáticos Mexicanos en el Mundo](#)
Hybrid event hosted at Casa Matemática Oaxaca in Mexico
- July 2021 [Mathematical Congress of the Americas](#)
Online conference organized in Argentina
- May 2021 [Students Probability Day VIII. In memory of Oded Schramm](#)
Weizmann Institute of Science, Rehovot, Israel
- Jan. 2020 [Joint Mathematics Meetings](#)
Denver, USA
- Dec. 2019 [Latin American Congress of Probability and Mathematical Statistics](#)
Merida, Mexico
- June 2019 [CMS Summer Meeting](#)
University of Regina, Regina, Canada
- Oct. 2018 [Retreat for Young Researchers in Stochastics](#)
Banff International Research Station (BIRS), Banff, Canada
- July 2018 [XIX International Congress on Mathematical Physics](#)
Centre Mont-Royal, Montreal, Canada
- July 2018 [Young Researchers Symposium](#)
McGill University, Montreal, Canada
- July 2017 [Mathematical Congress of the Americas](#)
Centre Mont-Royal and McGill University, Montreal, Canada
- Aug. 2013 [Mathematical Congress of the Americas](#)
Guanajuato, Mexico
- Oct. 2012 [XLV National Congress of the Mexican Mathematical Society](#)
Universidad Autónoma de Querétaro, Queretaro, Mexico