

SANTIAGO CAÑEZ

CURRICULUM VITAE, DATE: MAR 1, 2025

Department of Mathematics, Northwestern University
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Major Professional Interests

- Symplectic and Poisson geometry, mathematical physics
- Generalized geometry, supergeometry and derived structures
- Lie groupoids and differentiable stacks, Lie algebroids
- Undergraduate mathematics education at all levels

Education

- **University of California, Berkeley** — Berkeley, CA
Ph.D. Mathematics, May 2011
 - Dissertation: *Double Groupoids, Orbifolds, and the Symplectic Category*
 - Advisor: Alan Weinstein
- **University of Arizona** — Tucson, AZ
B.S. Mathematics, May 2002

Pre-Doctoral Awards

- Nikki Kose Memorial Teaching Prize (UC Berkeley) 2011
- highest teaching honor conveyed by Department of Mathematics
- Outstanding Graduate Student Instructor (UC Berkeley) 2006
- Mentored Research Award (UC Berkeley) 2006

Postdoctoral Awards

- Charles Deering McCormick Distinguished Professorship of Instruction 2020
- highest teaching honor conveyed by Northwestern University
- Weinberg College Arts & Sciences Alumni Teaching Award 2017
- Named to Associated Student Government Faculty Honor Roll 2014, 2022
- Departmental Excellence in Teaching Award 2014

Employment

- Professor of Instruction – Northwestern University, Evanston IL 2022–
- Co-Director, Causeway Postbaccalaureate Certificate Program 2023–
- Charles Deering McCormick Distinguished Professor of Instruction 2020–2023
- Director, Undergraduate Studies in Mathematics 2020–24
- Associate Professor of Instruction — Northwestern University, Evanston IL 2018–22
- Director, Mathematical Experience for Northwestern Undergraduates 2016–20
- Assistant Professor of Instruction — Northwestern University, Evanston IL 2015–18
- Postdoctoral Lecturer — Northwestern University, Evanston IL 2012–15
- Lecturer — UC Berkeley, Berkeley CA 2011–12
- Graduate Student Researcher – UC Berkeley, Berkeley CA 2006–11
- Graduate Student Instructor – UC Berkeley, Berkeley CA 2003–11

Research Support

- Linzer Grant for Faculty Innovation in Diversity and Equity (Northwestern) 2018–19
Eric Zaslow, Bryna Kra, John Alongi, Santiago Canez, Onnie Rogers: \$25,000
- The Causeway Postbaccalaureate Program (National Science Foundation) 2019–2023
Eric Zaslow, Bryna Kra, John Alongi, Santiago Canez, Onnie Rogers: \$850,000

Publications

- Colley, S. and Canez, S. **Vector Calculus**, Pearson, 2021, 5th edition
- Canez, S. **Double Groupoids and the Symplectic Category**, *J. Geom. Mech.* 10 (2018), no. 2, 217–250

Work Now in Progress

- **Poisson 2-Groupoids and Lie 2-Bialgebroids**: Project aimed at understanding the notion of a Lie 2-bialgebroid in terms of graded geometry, and using this to develop the notion of a Poisson 2-groupoid as the correct integrating object. The eventual goal is to use this concept to better understand symplectic 2-groupoids and their relation to Courant algebroids.
- **Causeway Postbaccalaureate Program**: Project aimed at developing a postbaccalaureate program in mathematics at Northwestern University. The target audience is that of first-generation low income students with undergraduate degrees in mathematics, with the goal of helping to make them more competitive in graduate school applications.

Professional Talks

- **Fun with Hyperbolic Geometry** Jul 2023
Causeway Seminar, Northwestern University
- **The Projective Perspective** Aug 2022
Causeway Seminar, Northwestern University
- **Supermathematics!** Feb 2022
Talk for Northwestern Undergraduate Mathematics Society
- **A Journey Through the World of Groupoids** Oct 2021
Causeway Seminar, Northwestern University
- **Projective Geometry and Arithmetic** Nov 2020
Talk for Northwestern Undergraduate Mathematical Society
- **Tangles and Continued Fractions** Oct 2019
Talk for Northwestern Undergraduate Mathematical Society
- **Supergeometry and Tangent Vectors** Oct 2017
Talk for Northwestern Undergraduate Mathematical Society
- **Maxwell's Equations and Geometry** Feb 2017
Slivka Residential College Fireside Chat, Northwestern University
- **The Cardinality of a Groupoid** Nov 2016
Talk for Northwestern Undergraduate Mathematical Society
- **Projective Geometry and Quantum Mechanics** May 2016
Slivka Residential College Fireside Chat, Northwestern University
- **The Linear Symplectic Category** Oct 2015
Talk for Northwestern Undergraduate Mathematical Society

- *Double Groupoids and the Symplectic Category* Oct 2011
"Gone Fishing" Poisson Geometry Meeting, Washington University in St. Louis
- *Double Groupoids and the Symplectic Category* Apr 2011
Northern California Symplectic Geometry Seminar, UC Berkeley
- *Poisson Groupoids and Double Lie Groupoids* Nov 2007
Groupoids Seminar, UC Berkeley
- *Holomorphic Lie Algebroids and Groupoids* Oct 2007
Differential Geometry Seminar, UC Berkeley
- *Generalized Complex Structures* Feb 2006
Generalized Geometry Seminar, UC Berkeley

Peer-Review and Related Activities

- Referee for *Journal of Symplectic Geometry* 2013
- Member of Northwestern Undergraduate Research Grant Review Committee 2018–
- Judge for Northwestern Office of Undergraduate Research Symposium 2023–24
- Moderator for panel discussion in 2024

Professional Affiliations and Service

- Member of the American Mathematical Society
- Member of the Mathematical Association of America
- Member of "Mathematics Programs that Make a Difference" Selection Committee 2023–24
- Committee of the American Mathematical Society, Chair in 2024
- Visiting Fellow of the Advanced Placement Calculus AB Exam Review Board 2023

Teaching and Advising

- **Courses Taught at Northwestern University:**
 - MATH 105: College Seminar (Mathematics on Screen) Fa 24
 - MATH 100: Quantitative Reasoning Sp 19
 - MATH 110: Introduction to Mathematics Fa 12, Wi 13
 - MATH 220: Differential Calculus of One Variable Functions Fa 18
 - MATH 224: Integral Calculus of One Variable Functions Fa 16/17
 - MATH 226: Sequences & Series Fa 19
 - MATH 230-1: Multivariable Differential Calculus Fa 22, Fa 23
 - MATH 281-2: Accelerated Mathematics for ISP Wi 22
 - MATH 285-1,2,3: Accelerated Mathematics for MMSS Sp 19, Fa 22, Wi 23, Sp 23
 - MATH 290-1,2,3: MENU Linear Algebra & Multivariable Calculus 2012–15, Fa 18, Wi 19
 - MATH 291-1,2,3: MENU Intensive LA & MV Calculus 2015–19, Fa 20
 - MATH 300: Foundations of Higher Mathematics Sp 13/17/18, Wi 19, Fa 24
 - MATH 306: Combinatorics & Discrete Mathematics Wi 19
 - MATH 320-1,2,3: Real Analysis Fa 13, 2014–15, 2015–16, 2019–20, Fa 23
 - MATH 321-1,2,3: MENU Real Analysis Fa 21, Sp 22, Wi 24
 - MATH 325: Complex Analysis Sp 24
 - MATH 330-1: Abstract Algebra Fa 24
 - MATH 331-1,2,3: MENU Abstract Algebra 2020–21
 - MATH 334: Abstract Linear Algebra Wi 25

MATH 340: Geometry	Sp 22
MATH 344-1: Introduction to Topology	Wi 17/18/25
MATH 360-1,2: MENU Applied Analysis	2019–20
MATH 381: Fourier Analysis & Boundary Value Problems for ISP	Fa 21
MATH 395: Undergraduate Seminar (category theory)	Sp 18

• **Courses Taught at Northwestern University for School of Professional Studies:**

MATH 202: Finite Mathematics	Wi 15
MATH 220-2: Single-Variable Integral Calculus	Su 21, Su 24
MATH 230-1: Multivariable Differential Calculus	Su 16, Su 22
MATH 230-B/2: Multivariable Integral Calculus	Fa 16/17/18, Wi 21, Su 23, Su 24
MATH 240: Linear Algebra	Wi 16/18, Su 16/17/18
MATH 300: Foundations of Higher Mathematics	Sp 14, Fa 15, Su 14/15/20/21/22/23
MATH 306: Combinatorics and Discrete Mathematics	Sp 18
MATH 320-A: Introduction to Real Analysis	Fa 13, Wi 17, Fa 20
MATH 330-A: Introduction to Abstract Algebra	Fa 13
MATH 334: Linear Algebra, Second Course	Su 14/15/18/19
MATH 340: Geometry	Wi 14, Sp 16

• **Courses Taught at University of California, Berkeley as Sole Instructor:**

Math 16A: Analytic Geometry & Calculus I	Sp 12
Math 53: Multivariable Calculus	Su 08
Math 54: Linear Algebra & Differential Equations	Su 05/06
Math 74: Transition to Upper Division Mathematics	Fa 07
Math 104: Real Analysis	Su 10, Fa 11
Math 110: Abstract Linear Algebra	Su 09
Math 113: Abstract Algebra	Su 12
Math 185: Complex Analysis	Su 11

• **Student Projects Supervised**

- Nara Shin, <i>Gelfand Daulity of C^*-algebras and Topology</i>	2024–
Honors Thesis in Mathematics, Northwestern University	
- Nara Shin, <i>C^*-algebras and Hausdorff distance</i>	Su 2024
Summer Undergraduate Research Grant Project, Northwestern University	
- Avery Powers, <i>Poisson Brackets for Super Lie Algebras</i>	Su 2024
Summer Undergraduate Research Grant Project, Northwestern University	
- Scott Hwang, <i>Invariant Subspaces of Shift Operators</i>	Su 2024
Summer Undergraduate Research Grant Project, Northwestern University	
- Estella Xu, <i>Coadjoint Orbits of Central Extensions of Lie Groups</i>	Su 2023
Summer Undergraduate Research Grant Project, Northwestern University	
- Sean Carlson, <i>Casimir Functions on Linear Quotient Spaces</i>	Su 2023
Summer Internship Grant Program Research Project, Northwestern University	
- Nick Dorai, <i>Lie 2-Groups and Coadjoint Orbits</i>	Su 2022
Summer Undergraduate Research Grant Project, Northwestern University	
- Gwen Cooke, <i>Loop Groups and Poisson Brackets</i>	Su 2021
Summer Undergraduate Research Grant Project, Northwestern University	
- Edgar Santos, <i>Graphs on Tori and Surfaces</i>	Su 2021
Causeway Postbaccalaureate Program Research Project, Northwestern University	

- Nicholas Karris, <i>Lie 2-Algebras and Poisson brackets</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2020
- Charlie Dzierdzic, <i>Topology and C*-algebras</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2020
- Justin Lin, <i>Ramsey Theory</i> Honors Thesis in Mathematics, Northwestern University	2019–20
- Jinming Zhang, <i>The Haar Measure Problem</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2019
- Justin Lin, <i>Multicolor Ramsey Numbers</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2019
- Yintian Zhan, <i>The Invariant Subspace Problem for Hilbert Spaces</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2018
- Nicholas Irons, <i>Deformation Quantization and the Moyal Product</i> Honors Thesis in Mathematics, Northwestern University	2017–18
- Garrett Andrews, <i>Geometric Properties of Reflexive Banach Spaces</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2017
- Joseph Buzzi, <i>Complements of Banach Spaces in their Biduals</i> Summer Undergraduate Research Grant Project, Northwestern University	Su 2017
- Malcolm Lazarow, <i>Curvature on Principal G-Bundles</i> Honors Thesis in Mathematics, Northwestern University	2016–17
- Raghda Abouelnaga, <i>Functional Analysis</i> Summer Research Project, UC Berkeley	Su 2012

Department, College, and University Service

• Member of Schapiro Secondary School Teacher Award Selection Committee	2023–
• Member of Weinberg College Faculty Appeals Panel	2023–
• Member of University Teaching Awards Selection Committee	2023–24
• Member of Weinberg College Teaching Awards Selection Committee	2024
• Member of School of Professional Studies Curriculum and Degree Board	2021–
• Member of Weinberg College Committee on Promotion & Retention Criteria	2019–20
• Member of Weinberg College Advisor Hiring Committee	2019
• Member of Residence-Based Instruction & Academic Support Working Group	2018–19
• Member of Weinberg College Committee on Degree Requirements	2016–17
• Chair of Mathematics Climate Committee	2021–22
• Chair of Mathematics Undergraduate Committee	2020–24
• Chair of Mathematics Postdoctoral Lecturer Hiring Committee	2024–
• Member of Mathematics Undergraduate Committee	2015–
• Member of Mathematics MENU Committee	2015–21
• Member of Mathematics Teaching-Track Hiring Committee	2017–19
• Member of Mathematics Postdoctoral Lecturer Hiring Committee	2018–20, 2024–
• Departmental Teaching Mentor for New Faculty	2015–
• Co-Director of Calculus Program	2015–16
• Instructor of Advanced Course at Evanston Township High School	2012–20, 2024–
• Coordinator of Evanston Math Circle	2012–23
• Instructor of Quantitative Reasoning summer BRIDGE Course	2019–