CURRICULUM VITÆ OF BENJAMIN STEINBERG

PERSONAL DATA

Current Academic Affiliation:	Department of Mathematics City College of New York Convent Ave at 138th Street New York, NY 10031 USA
Position:	Distinguished Professor (tenured)
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EDUCATION

Ph.D. Mathematics, University of California at Berkeley, Berkeley, California, May 1998.

B.A. Mathematics and Statistics, Rice University, Houston, Texas, May 1994, Summa Cum Laude.

ACADEMIC EMPLOYMENT HISTORY

City College of New York	Distinguished Professor	8/2023–
City College of New York	Professor	9/2012–2023
CUNY Graduate Center	Mathematics Graduate Faculty	1/2012–present
City College of New York	Associate Professor	9/2010–8/2012
University of Uppsala	Visiting Professor	5/2011
Carleton University	Associate Professor	7/2004–9/2011
University of Leipzig	DFG Mercator Visiting Professor	12/2008–8/2009
Carleton University	Assistant Professor	7/2002–6/2004
The University of Porto	Auxiliary Professor	1/2001–6/2002
The University of Porto	NSF-NATO Postdoctoral Fellow	12/1999–12/2000
The University of Porto	Praxis Postdoctoral Fellow	10/1998–12/1999

AREAS OF INTEREST

Algebra, including semigroup theory, geometric group theory, and representation theory; applications to automata theory and computer science

ACADEMIC HONORS/FELLOWSHIPS

Distinguished Professor of the City University of New York 2023; Plenary Lecture for the 63^{rd} Meeting of the Australian Mathematical Society 2019; Shortlisted for the Mahony-Neumann-Room Prize 2019; Fulbright U.S. Scholar Award to Brazil 2018–2019; Deutsche Forschungsgemeinschaft Mercator Visiting Professorship at the University of Leipzig 2009; Nominee of the Carleton Faculty of Sciences for the Petro-Canada Young Innovators Award 2006; NSF-NATO Postdoctoral Fellowship 1999–2000; PRAXIS Postdoctoral Fellowship 1998–1999; NSF-NATO Postdoctoral Fellowship Honorable Mention 1998; U.C. Berkeley Nominee for Sloan

Dissertation 1997; U.C. Berkeley Math. Dept. Block Grant, Spring 1996, Spring 1997; Graduate Student Instructorship 1994–1998; NSF Graduate Student Fellowship Nominee 1994–1995; DOD Fellowship Nominee 1994; Phi Beta Kappa 1994; Summa Cum Laude 1994; Rice University Award for Best Science and Engineering Junior 1993; National Merit Scholar 1990–1994.

LANGUAGES

English, Portuguese and French

PUBLICATIONS

Books

(1) B. Steinberg (ed.), "Languages and Automata: GAGTA Book 3," De Gruyter, 418 pages, 2024.
(2) B. Steinberg, "Representation theory of finite monoids," Springer Universitext, 317 pages, 2016.
(3) M. Bilen Can, Z. Li, B. Steinberg and Q. Wang (eds.), "Algebraic monoids, group embeddings and algebraic combinatorics," Fields Institute Communications, Vol. 71, Springer, 354 pages, 2014.
(4) B. Steinberg, "Representation theory of finite groups: An introductory approach," Springer Universitext, 157 pages, 2011.
(5) J. Rhodes and B. Steinberg, "The $\mathfrak{q}$-theory of finite semigroups," Springer Monographs in Mathematics, 666 pages, 2009.

Special Journal Issues

(1) "International Conference on Semigroups and Groups in Honor of the 65th Birthday of Prof. John Rhodes," papers from the conference held at the University of Porto, Porto, June 26–29, 2002. Edited by S. W. Margolis and B. Steinberg. Internat. J. Algebra Comput. **14** (2004), no. 5-6. World Scientific Publishing Co. Ptd. Ltd., Singapore, 2004. pp. i–xii and 525–827.
(2) "A Special Issue in Memory of Bret Tilson." Edited by J. Rhodes, S. W. Margolis and B. Steinberg International Journal of Algebra and Computation **20** (2010), no. 2, World Scientific Publishing Co., Singapore pp. i–xx and 115–341.

Papers Accepted for Publication in Refereed Journals

(1) B. Steinberg, *Stable finiteness of ample groupoid algebras, traces and applications*, J. Comb. Algebra, to appear.

Papers in Refereed Journals

(1) E. Gardella, V. Nekrashevych, B. Steinberg and A. Vdovina, *Simplicity of C^*-algebras of contracting self-similar groups*, Commun. Math. Phys. 406, No. 10, Paper No. 251, 17 p. (2025).
(2) B. Steinberg, *Topology and monoid representations II: left regular bands of groups and Hsiao's monoid of ordered G-partitions*, J. Algebra **665** (2025), 679–710.
(3) B. Steinberg, *Topology and monoid representations I: Foundations*, J. Pure Appl. Algebra **229** (2025), no. 1, Paper No. 107848, 36 pp.
(4) G. G. de Castro, D. Gonçalves, B. Steinberg, *Ideals of étale groupoid algebras with coefficients in a sheaf with applications to topological dynamics*, Doc. Math. 30, No. 6, 1421–1459 (2025).
(5) B. Steinberg, *A Pride-Guba-Sapir exact sequence for the relation bimodule of an associative algebra*, Glasg. Math. J. **67** (2025), 467–474..

(6) B. Steinberg, *The homology of completely simple semigroups*, Semigroup Forum **110** (2025), 745–761.
(7) R. D. Gray and B. Steinberg, *Topological finiteness properties of monoids. Part 2: special monoids, one-relator monoids, amalgamated free products, and HNN extensions*, Doc. Math. **29** (2024), 511–560.
(8) B. Steinberg, *Contractibility of the orbit space of the p-subgroup complex via Brown-Forman discrete Morse theory*, Proc. Amer. Math. Soc. **152** (2024), 515–519.
(9) B. Steinberg, *A note on projections in étale groupoid algebras and diagonal preserving homomorphisms*, Bull. Aust. Math. Soc. 110 (2024), no. 3, 508–513.
(10) P. V. Silva and B. Steinberg, *Finitely presented inverse semigroups with finitely many idempotents in each $\mathcal{D}$-class and non-Hausdorff universal groupoids*, J. Aust. Math. Soc. **116** (2024), 384–398.
(11) B. Steinberg and N. Szakács, *On the simplicity of Nekrashevych algebras of contracting self-similar groups*, Math. Ann. **386** (2023), 1391–1428.
(12) B. Armstrong, G. G. de Castro, L. O. Clark, K. Courtney, Y.-F. Lin, K. McCormick, J. Ramagge, A. Sims and B. Steinberg, *Reconstruction of twisted Steinberg algebras*, Int. Math. Res. Not. IMRN (2023), 2474–2542.
(13) M. Boyle and B. Steinberg, *Decidability of flow equivalence and isomorphism problems for graph C^*-algebras and quiver representations*, Proc. Amer. Math. Soc. **151** (2023), 5151–5161.
(14) S. W. Margolis and B. Steinberg, *On the minimal faithful degree of Rhodes semisimple semigroups*, J. Algebra **633** (2023), 788–813.
(15) B. Steinberg, *Extensions of theorems of Gaschütz, Žmud′ and Rhodes on faithful representations*, Algebr. Represent. Theory **26** (2023), 1641–1667.
(16) B. Steinberg, *Twists, crossed products and inverse semigroup cohomology*, J. Aust. Math. Soc. **114** (2023), 253288.
(17) R. D. Gray and B. Steinberg, *A Lyndon's identity theorem for one-relator monoids*, Selecta Math. (N.S.) **28** (2022), no. 3, Paper No. 59.
(18) R. D. Gray and B. Steinberg, *Topological finiteness properties of monoids. Part 1: Foundations*, Algebr. Geom. Topol. **22** (2022), no. 7, 3083–3170.
(19) B. Steinberg, *Factoring the Dedekind-Frobenius determinant of a semigroup*, J. Algebra **605** (2022), 1–36.
(20) E. W. Lee, J. Rhodes and B. Steinberg, *On join irreducible $\mathscr{J}$-trivial semigroups*, Rend. Semin. Mat. Univ. Padova **147** (2022), 43–78.
(21) S. Margolis, F. Saliola and B. Steinberg, *Cell complexes, poset topology and the representation theory of algebras arising in algebraic combinatorics and discrete geometry*, Mem. Amer. Math. Soc. **274** (2021), no. 1345, iii–135.
(22) B. Steinberg and N. Szakács, *Simplicity of inverse semigroup and étale groupoid algebras*, Adv. Math. **380** (2021), 107611.
(23) B. Steinberg, *Ideals of etale groupoid algebras and Exel's Effros-Hahn conjecture*, J. Noncommut. Geom. **15** (2021), 829–839.
(24) K. Juschenko, B. Steinberg, P. Wesolek, *On elementary amenable bounded automata groups*, Indiana Univ. Math. J. **70** (2021), 2479–2526.
(25) R. Gray and B. Steinberg, *Free inverse monoids are not FP_2*, C. R. Math. Acad. Sci. Paris, **359** (2021), 1047–1057.
(26) M. H. Shahzamanian and B. Steinberg, *Simplicity of augmentation submodules for transformation monoids*, Algebr. Representat. Theor. **24** (2021), 1029–1051.
(27) D. Gonçalves and B. Steinberg, *Étale groupoid algebras with coefficients in a sheaf and skew inverse semigroup rings*, Canad. J. Math. **73** (2021), 1592–1626.

(28) A. Costa and B. Steinberg, *The Karoubi envelope of the mirage of a subshift*, Comm. Algebra **49** (2021), 4820-–4856.
(29) M. H. Shahzamanian and B. Steinberg, *The quiver of an affine monoid*, Comm. Algebra **49** (2021), 5329–5341.
(30) A. Ayyer and B. Steinberg, *Random walks on rings and modules*, Algebr. Comb. **3** (2020), 309–329.
(31) R. Skipper and B. Steinberg, *Lamplighter groups, bireversible automata and rational series over finite rings*, Groups Geom. Dyn. **14** (2020), 567–589.
(32) L. O. Clark, B. Steinberg and D. W. van Wyk, *GCR and CCR Steinberg algebras*, Canad. J. Math. **72** (2020), 1581–1606.
(33) S. J. v. Gool and B. Steinberg, *Pointlike sets for varieties determined by groups*, Adv. Math. **348** (2019), 18–50.
(34) B. Steinberg, *Diagonal-preserving isomorphisms of étale groupoid algebras*, J. Algebra **518** (2019), 412–439.
(35) S. J. v. Gool and B. Steinberg, *Pro-aperiodic monoids via saturated models*, Israel J. Math. **234** (2019), 451–498.
(36) B. Steinberg, *Prime étale groupoid algebras with applications to inverse semigroup and Leavitt path algebras*, J. Pure Appl. Algebra **223** (2019), 2474–2488.
(37) S. J. van Gool and B. Steinberg, *Merge decompositions, two-sided Krohn-Rhodes, and aperiodic pointlikes*, Canad. Math. Bull. **362**, (2019), 199–208.
(38) B. Steinberg, *Linear conjugacy*, Canad. Math. Bull. **62** (2019), 886–895.
(39) E. W. H. Lee, J. Rhodes and B. Steinberg, *Join irreducible semigroups*, Internat. J. Algebra Comput. **29** (2019), 1249–1310.
(40) S. Margolis and B. Steinberg, *Projective indecomposable modules and quivers for monoid algebras*, Comm. Algebra **46** (2018), 5116–5135.
(41) B. Steinberg, *Chain conditions on étale groupoid algebras with applications to Leavitt path algebras and inverse semigroup algebras*, J. Aust. Math. Soc. **104** (2018), 403–411.
(42) J. Araújo, P. J. Cameron and B. Steinberg, *Between primitive and 2-transitive: Synchronization and its friends*, EMS Surv. Math. Sci. **4** (2017), 101–184.
(43) J. Almeida, M.H. Shahzamanian and B. Steinberg, *The pro-nilpotent group topology on a free group*, J. Algebra **480** (2017), 332–345.
(44) B. Steinberg, *Appendix to "Undecidability and the developability of permutoids and rigid pseudogroups"* by M. R. Bridson and H. Wilton, Forum Math. Sigma **5** (2017), e10, 20 pp.
(45) A. Egri-Nagy, M. Jackson, J. Rhodes, B. Steinberg, *On the atoms of algebraic lattices arising in q-theory*, Internat. J. Algebra Comput.**27** (2017), 157-188.
(46) A. Costa and B. Steinberg, *A categorical invariant of flow equivalence of shifts*, Ergodic Theory Dynam. Systems **36** (2016), 470–513.
(47) B. Steinberg, *The global dimension of the full transformation monoid with an appendix by V. Mazorchuk and B. Steinberg*, Algebr. Represent. Theory **19** (2016), 731–747.
(48) B. Steinberg, *Simplicity, primitivity and semiprimitivity of étale groupoid algebras with applications to inverse semigroup algebras*, J. Pure Appl. Algebra **220** (2016), 1035–1054.
(49) S. W. Margolis, F. V. Saliola and B. Steinberg, *Combinatorial topology and the global dimension of algebras arising in combinatorics*, J. Eur. Math. Soc **17** (2015), 3037–3080.
(50) A. Ayyer, A. Schilling, B. Steinberg and N. Thiéry, *Directed nonabelian sandpile models on trees*, Comm. Math. Phys. **335** (2015), 1065–1098.
(51) A. Masuda, L. Quoos and B. Steinberg, *Character theory of monoids over an arbitrary field*, J. Algebra **431** (2015), 107–126.
(52) A. Ayyer, A. Schilling, B. Steinberg and N. Thiéry, *Markov chains, $\mathscr{R}$-trivial monoids and representation theory*, Internat. J. Algebra Comput. **25** (2015), 169–231.

(53) W. Hajji and B. Steinberg, *A parametrization of the irreducible representations of a compact inverse semigroup*, Comm. Algebra **43** (2015), 5261–5281.
(54) M. Lohrey, B. Steinberg and G. Zetzsche, *Rational subsets and submonoids of wreath products*, Inform. and Comput. **243** (2015), 191–204.
(55) A. Costa and B. Steinberg, *The Schützenberger category of a semigroup*, Semigroup Forum **91** (2015), 543–559.
(56) D. Milan and B. Steinberg, *On inverse semigroup C^*-algebras and crossed products*, Groups Geom. Dyn. **8** (2014), 485–512.
(57) B. Steinberg, *On a conjecture of Karrass and Solitar*, J. Group Theory **17** (2014), 433–444.
(58) B. Steinberg, *Modules over étale groupoid algebras as sheaves*, J. Aus. Math. Soc. **97** (2014), 418–429.
(59) S. W. Margolis, F. V. Saliola and B. Steinberg, *Semigroups embeddable in hyperplane face monoids*, Semigroup Forum **89** (2014), 236–248.
(60) M. V. Lawson, S. W. Margolis and B. Steinberg, *The étale groupoid of an inverse semigroup as a groupoid of filters*, J. Aus. Math. Soc. **94** (2013), 234–256.
(61) D. Handelman, W. Hajji and B. Steinberg, *On finite-dimensional representations of compact inverse semigroups*, Semigroup Forum **87** (2013), 497–508.
(62) S. W. Margolis and B. Steinberg, *Quivers of monoids with basic algebras*, Compositio Mathematica **148** (2012), 1516–1560.
(63) K. Henckell, J. Rhodes and B. Steinberg, *An effective lower bound for group complexity of finite semigroups and automata*, Trans. Amer. Math. Soc. **364** (2012), 1815–1857.
(64) V. Mazorchuk and B. Steinberg, *Double Catalan monoids*, J. Algebr. Comb. **36** (2012), 333–354.
(65) V. Mazorchuk and B. Steinberg, *Effective dimension of finite semigroups*, J. Pure Appl. Algebra **216** (2012), 2737–2753.
(66) J. Funk, P. Hofstra and B. Steinberg, *Isotropy and crossed toposes*, Theory Appl. Categ. **26** (2012), 660–709.
(67) B. Steinberg, *Yet another solution to the Burnside problem for matrix semigroups*, Canad. Math. Bull. **55** (2012), 188–192.
(68) V. Diekert, M. Kufleitner and B. Steinberg, *The Krohn-Rhodes theorem and local divisors*, Fund. Inform. **116** (2012), 65–77.
(69) A. Costa and B. Steinberg, *Profinite groups associated to sofic shifts are free*, Proc. London Math. Soc. **102** (2011), 370–394.
(70) S. W. Margolis and B. Steinberg, *The quiver of an algebra associated to the Mantaci-Reutenauer descent algebra and the homology of regular semigroups*, Algebr. Representat. Theor. **14** (2011), 131–159.
(71) M. Lohrey and B. Steinberg, *Tilings and submonoids of metabelian groups*, Theory Comp. Syst. **48** (2011), 411–427.
(72) Z. Izhakian, J. Rhodes and B. Steinberg, *Representation theory of finite semigroups over semirings*, J. Algebra **336** (2011), 139–157.
(73) B. Steinberg, M. Vorobets and Y. Vorobets, *Automata over a binary alphabet generating free groups of even rank*, Internat. J. Algebra Comput. **21** (2011), 329–354.
(74) J. Funk, M. Lawson and B. Steinberg, *Characterizations of Morita equivalent inverse semigroups*, J. Pure. Appl. Algebra **215** (2011), 2262–2279.
(75) M. Delgado and B. Steinberg, *On iterated Malcev products with a pseudovariety of groups*, Internat. J. Algebra Comput. **21** (2011), 1285–1304.
(76) B. Steinberg, *The Černý conjecture for one-cluster automata with prime length cycle*, Theoret. Comput. Sci. **412** (2011), 5487–5491.
(77) B. Steinberg, *Strong Morita equivalence of inverse semigroups*, Houston J. Math. **37** (2011), 895–927.

(78) B. Steinberg, *On the endomorphism monoid of a profinite semigroup*, Portugaliae Mathematica **68** (2011), 177–183.
(79) B. Steinberg, *The averaging trick and the Černý conjecture*, Internat. J. Found. Comput. Sci. **22**(2011), 1697–1706.
(80) B. Steinberg, *A groupoid approach to discrete inverse semigroup algebras*, Adv. in Math. **223** (2010), 689–727.
(81) M. Lohrey and B. Steinberg, *An automata theoretic approach to the generalized word problem in graphs of groups*, Proc. Amer. Math. Soc. **138** (2010), 445–453.
(82) M. Lohrey and B. Steinberg, *Submonoids and rational subsets of groups with infinitely many ends*, J. Algebra **324** (2010), 970–983.
(83) B. Steinberg, *Cerny's conjecture and group representation theory*, J. Algebr. Comb. **31** (2010), 83–109.
(84) B. Steinberg, *Maximal subgroups of the minimal ideal of a free profinite monoid are free*, Israel J. Math. **176** (2010), 139–155.
(85) J. Almeida, S. W Margolis, B. Steinberg and M. V. Volkov, *Characterization of group radicals with an application to Mal'cev products*, Illinois J. Math. **54** (2010), 199–221.
(86) B. Steinberg, *A theory of transformation monoids: combinatorics and representation theory*, Electron. J. Comb. **17** (2010), Research Paper R164, 56 p., electronic only.
(87) B. Steinberg, *A combinatorial property of ideals in free profinite monoids*, J. Pure Appl. Algebra **214** (2010), 1693–1695.
(88) K. Henckell, J. Rhodes and B. Steinberg, *Aperiodic pointlikes and beyond*, Internat. J. Algebra Comput. **20** (2010), 287–305.
(89) K. Henckell, J. Rhodes and B. Steinberg, *A profinite approach to stable pairs*, Internat. J. Algebra Comput. **20** (2010), 269–285.
(90) B. Steinberg, *A structural approach to locality of pseudovarieties of the form* $\mathbf{LH} \circledcirc{m} \mathbf{V}$, Internat. J. Algebra Comput. **20** (2010), 307–318.
(91) L. Ribes and B. Steinberg, *A wreath product approach to classical subgroup theorems*, Enseign. Math. (2) **56** (2010), 49–72.
(92) B. Steinberg, *Semigroup actions, covering spaces and Schützenberger groups*, Semigroup Forum **81** (2010), no. 1, 217–227.
(93) J. Funk and B. Steinberg, *The universal covering of an inverse semigroup*, Appl. Categ. Structures **18** (2010), 135–163.
(94) J. Almeida, S. W. Margolis, B. Steinberg and M. V. Volkov, *Representation theory of finite semigroups, semigroup radicals and formal language theory*, Trans. Amer. Math. Soc. **361** (2009), 1429–1461.
(95) J. Almeida and B. Steinberg, *Rational codes and free profinite monoids*, J. London Math. Soc. **79** (2009), 465–477.
(96) O. Ganyushkin, V. Mazorchuk and B. Steinberg, *On the irreducible representations of a finite semigroup*, Proc. Amer. Math. Soc., **137** (2009), 3585–3592.
(97) B. Steinberg, *Möbius functions and semigroup representation theory II: Character formulas and multiplicities*, Adv. in Math. **217** (2008), 1521–1557.
(98) J. Rhodes and B. Steinberg, *Closed subgroups of free profinite monoids are projective profinite groups*, Bull. Lond. Math. Soc. **40** (2008), 375–383.
(99) M. Lohrey and B. Steinberg, *The submonoid and rational subset membership problems for graph groups*, J. Algebra **320** (2008), 728–755.
(100) B. Steinberg, *A note on the power semigroup of a completely simple semigroup*, Semigroup Forum **76** (2008), 584–586.
(101) M. Kambites, P. V. Silva and B. Steinberg, *On the rational subset problem for groups*, J. Algebra **309** (2007), 622–639.

(102) K. Auinger and B. Steinberg, *Varieties of finite supersolvable groups with the M. Hall property*, Math. Ann. **335** (2006), 853–877.
(103) M. Kambites, P. V. Silva and B. Steinberg, *The spectra of lamplighter groups and Cayley machines*, Geom. Dedicata **120** (2006), 193–227.
(104) B. Steinberg, *Möbius functions and semigroup representation theory*, J. Combin. Theor. Ser. A. **113** (2006), 866–881.
(105) F. Arnold and B. Steinberg, *Synchronizing groups and automata*, Theoret. Comput. Sci. **359** (2006), 101–110.
(106) J. Rhodes and B. Steinberg, *Complexity pseudovarieties are not local; Type II subsemigroups can fall arbitrarily in complexity*, Internat. J. Algebra Comput. **16** (2006), 739–748.
(107) M. V. Lawson, S. W. Margolis and B. Steinberg, *Expansions of inverse semigroups*, J. Aus. Math. Soc. **80** (2006), 205–228.
(108) K. Auinger and B. Steinberg, *A constructive proof of the Ribes-Zalesskiĭ product theorem*, Math. Z. **250** (2005), 287–297.
(109) K. Auinger and B. Steinberg, *On power groups and embedding theorems for relatively free profinite monoids*, Math. Proc. Cambridge Philos. Soc. **138** (2005), 211–232.
(110) P. V. Silva and B. Steinberg, *On a class of automata groups generalizing lamplighter groups*, Internat. J. Algebra Comput. **15** (2005), 1213–1235.
(111) K. Auinger and B. Steinberg, *Constructing divisions into power groups*, Theoret. Comput. Sci. **341** (2005), 1–21.
(112) J. Rhodes and B. Steinberg, *Krohn-Rhodes complexity pseudovarieties are not finitely based*, Theor. Inform. Appl. **39** (2005), 279–296.
(113) B. Steinberg, *On aperiodic relational morphisms*, Semigroup Forum **70** (2005), 1–43.
(114) K. Auinger and B. Steinberg, *The geometry of profinite graphs with applications to free groups and finite monoids*, Trans. Amer. Math. Soc. **356** (2004), 805–851.
(115) P. V. Silva and B. Steinberg, *A geometric characterization of automatic monoids*, Q. J. Math. **55** (2004), 333–356.
(116) B. Steinberg, *On an assertion of John Rhodes and the finite basis and finite vertex rank problems for pseudovarieties*, J. Pure Appl. Algebra **186** (2004), 91–107.
(117) M. V. Lawson and B. Steinberg, *Étendues and ordered groupoids*, Cah. Topol. Géom. Différ. Catég. **45** (2004), 82–108.
(118) M. Delgado, V. H. Fernandes, S. W. Margolis and B. Steinberg, *On semigroups whose idempotents generate an aperiodic subsemigroup*, Internat. J. Algebra Comput. **14** (2004), 655–665.
(119) K. Auinger, G. M. S. Gomes, V. Gould and B. Steinberg, *An application of a theorem of Ash to finite covers*, Studia Logica **78** (2004), 45–57.
(120) K. Auinger and B. Steinberg, *On the extension problem for partial permutations*, Proc. Amer. Math. Soc. **131** (2003), 2693–2703.
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(122) B. Steinberg, *The uniform word problem for groups and finite Rees quotients of E-unitary inverse semigroups*, J. Algebra **266** (2003), 1–13.
(123) R. Gitik, S. W. Margolis and B. Steinberg, *On the Kurosh theorem and separability properties*, J. Pure Appl. Algebra **179** (2003), 87–97.
(124) B. Steinberg, *The lifting and classification problems for subspaces of covering spaces*, Topology Appl. **133** (2003), 15–35.
(125) B. Steinberg and B. Tilson, *Categories as algebra 2*, Internat. J. Algebra Comput. **13** (2003), 627–703.

(126) B. Steinberg, *McAlister's P-theorem via Schützenberger graphs*, Comm. Algebra **31** (2003), 4387–4392.
(127) B. Steinberg, *Partial actions of groups on cell complexes*, Monatsh. Math. **138** (2003), 159–170.
(128) P. V. Silva and B. Steinberg, *Extensions and subsemigroups of automatic monoids*, Theoret. Comput Sci. **289** (2002), 727–754.
(129) M. Delgado, S. W. Margolis and B. Steinberg, *Combinatorial group theory, inverse monoids, automata, and global semigroup theory*, Internat. J. Algebra Comput. **12** (2002), 179–211.
(130) J. Rhodes and B. Steinberg, *Profinite semigroups, varieties, expansions, and the structure of relatively free profinite semigroups*, Internat. J. Algebra Comput. **11** (2002), 627–672.
(131) B. Steinberg, *Finite state automata: A geometric approach*, Trans. Amer. Math. Soc. **353** (2001), 3409–3464.
(132) B. Steinberg, *Factorization theorems for morphisms of ordered groupoids and inverse semigroups*, Proc. Edinb. Math. Soc. **44** (2001), 549–569.
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(134) B. Steinberg, *Inverse automata and profinite topologies on a free group*, J. Pure Appl. Algebra **167** (2001), 341–359.
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(137) B. Steinberg, *Algorithmic problems for joins of pseudovarieties*, Semigroup Forum **62** (2001), 1–40.
(138) B. Steinberg, *A note on the equation* $\mathbf{PH} = \mathbf{J} * \mathbf{H}$, Semigroup Forum **63** (2001), 469–474.
(139) B. Steinberg, *A delay theorem for pointlikes*, Semigroup Forum **63** (2001), 281–304.
(140) J. Almeida and B. Steinberg, *On the decidability of iterated semidirect products with applications to complexity*, Proc. Lond. Math. Soc. **80** (2000), 50–74.
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(142) B. Steinberg, *Fundamental groups, inverse Schützenberger automata, and monoid presentations*, Comm. Algebra **28** (2000), 5235–5253.
(143) J. Rhodes and B. Steinberg, *Pointlike sets, hyperdecidability, and the identity problem for finite semigroups*, Internat. J. Algebra Comput. **9** (1999), 475–481.
(144) B. Steinberg, *Semidirect products of categories with applications*, J. Pure Appl. Algebra **142** (1999), 153–182.
(145) B. Steinberg, *Monoid kernels and profinite topologies on the free Abelian group*, Bull. Austral. Math. Soc. **60** (1999), 391–402.
(146) B. Steinberg, *On pointlike sets and joins of pseudovarieties*, Internat. J. Algebra Comput. **8** (1998), 203–231.

Papers in Refereed Conference Proceedings

(1) B. Steinberg, Benjamin, *Pointlike sets and separation: a personal perspective*, in "Developments in Language Theory," edited by Nelma Moreira and Rogério Reis, Lecture Notes in Comput. Sci., **12811** (2021), Springer, Cham, 27–40.
(2) R. Exel and B. Steinberg, *The inverse hull of* 0*-left cancellative semigroups*, in Proc. Int. Cong. of Math. – 2018 Rio de Janeiro, edited by B. Sirakov, P. N. de Souza and M. Viana, Vol. 2, 1579–1608, World Scientific, https://doi.org/10.1142/11060.

(3) S. J. van Gool and B. Steinberg, *Pro-aperiodic monoids via saturated models*, in 34th Symposium on Theoretical Aspects of Computer Science (STACS 2017), eds. Heribert Vollmer and Brigitte Valleé, Leibniz International Proceedings in Informatics (LIPIcs) **66**, Schloss Dagstuhl - Leibniz-Zentrum für Informatik (2017), 39:1–39:14.

(4) B. Steinberg, *On some algorithmic properties of finite state automorphisms of rooted trees* in "Algorithmic Problems in Group Theory, Their Complexity, and Applications to Cryptography," edited by D. Kahrobaei and V. Shpilrain, Contemporary Mathematics **633** (2015), 115–123.

(5) S. W. Margolis, F. Saliola and B. Steinberg, *Poset topology and homological invariants of algebras arising in algebraic combinatorics*, FPSAC 2014, Chicago, DMTCS proc. **AT**, 2014, 71–82.

(6) M. Lohrey, B. Steinberg and G. Zetzsche, *Rational subsets and submonoids of wreath products*, in "ICALP(2)," edited by F. V. Fomin, R. Freivalds, M. Kwiatkowska, and D. Peleg, Springer Lecture Notes in Computer Science **7966** (2013), 361–372.

(7) B. Steinberg, *The averaging trick and the Černý conjecture*, in "Developments in Language Theory" edited by Y. Gao, H. Lu, S. Seki and S. Yu, Springer Lecture Notes in Computer Science **6224** (2010), 423–431.

(8) J. Almeida and B. Steinberg, *Matrix mortality and the Černý-Pin conjecture*, in "Developments in Language Theory" edited by V. Diekert and D. Nowotka, Springer Lecture Notes in Computer Science **5583** (2009), 67–80.

(9) B. Steinberg, *Subsequence counting, matrix representations and a theorem of Eilenberg*, in "Language and Automata Theory and Applications," edited by Carlos Martín-Vide, Friedrich Otto and Henning Fernau, Springer Lecture Notes in Computer Science **5196** (2008), 6–10.

(10) M. Kambites and B. Steinberg, *Wreath product decompositions for triangular matrix semigroups*, in Proceedings of the International Conference Semigroups and Formal Languages, eds. J. André, V. H. Fernandes, M. J. J Branco, GMS Gomes, J. Fountain, and J. C. Meakin, World Scientific, 2007, 129–144.

(11) M. Delgado, A. Masuda and B. Steinberg, *Solving systems of equations modulo pseudovarieties of abelian groups and hyperdecidability*, in Proceedings of the International Conference Semigroups and Formal Languages, eds. J. André, V. H. Fernandes, M. J. J Branco, GMS Gomes, J. Fountain, and J. C. Meakin, World Scientific, 2007, 57–65.

(12) J. Almeida, S. W. Margolis, B. Steinberg and M. V. Volkov, *Modular and threshold subword counting and matrix representations of finite monoids*, in "Words 2005, 5^{th} International Conference on Words, 13-17 September 2005, Acts," edited by S. Brlek and C. Reutenauer, Publications du Laboratoire de Combinatoire et d' Informatique Mathématique, UQAM **36** (2005), 65–78.

(13) J. Rhodes and B. Steinberg, *Join irreducible pseudovarieties, group mapping and Kovács-Newman semigroups*, in "LATIN 2004: Theoretical Informatics, Buenos Aires, Argentina April 2004," edited by M. Farach-Colton, Springer Lecture Notes in Computer Science **2976** (2004), 279–291.

(14) B. Steinberg, *A modern approach to some results of Stiffler*, in: "Proceedings of the Workshop Semigroups and Languages," edited by I. Araújo, M. Branco, V. Fernandes and G. Gomes, World Sci. Publishing, Singapore 2004, 240–249.

(15) S. W. Margolis and B. Steinberg, *Power semigroups and polynomial closure*, in "Words, Languages & Combinatorics, III (Kyoto, 2000)," edited by M. Ito, World Sci. Publishing, River Edge, NJ, 2003, 311–322.

(16) B. Steinberg, *A sampler of a topological approach to inverse semigroups*, in "Semigroups, Algorithms, Automata and Languages," edited by G. M. S. Gomes, J.-E. Pin, and P. Silva, World Scientific, Singapore, 2002, 437–461.

(17) J. Almeida and B. Steinberg, *Syntactic and global semigroup theory, a synthesis approach* in "Algorithmic Problems in Groups and Semigroups," edited by J. -C. Birget, S. Margolis, J. Meakin, and M. Sapir, Birkhauser, 2000, 1–23.
(18) B. Steinberg, **PG = BG***: Redux* in "Proceedings of the International Conference on Semigroups," edited by P. Smith, E. Giraldes, and P. Martins, World Scientific, Singapore, 2000, 181–190.
(19) B. Steinberg, *Parallel computation: The join of pseudovarieties*, in "Algebraic Engineering," edited by C. Nehaniv and M. Ito, World Scientific, Singapore, 1999, 302–315.

Computer Packages

(1) J. D. Mitchell, J. East, A. Egri-Nagy, J. Jonusas, M. Pfeiffer, B. Steinberg, J. Smith, M. Torpey, W. Wilson, *GAP package Semigroup*, `http://www.gap-system.org/Packages/semigroups.html`, 2014.

Preprints

(1) A. Miller and B. Steinberg, *Homology and K-theory for self-similar actions of groups and groupoids*, `https://arxiv.org/abs/2409.02359`, 2024.
(2) B. Steinberg, *The modular representation theory of monoids*, `https://arxiv.org/abs/2305.08251`, 2023.
(3) B. Steinberg and D. W. van Wyk, *On von Neumann regularity of ample groupoid algebras*, `https://arxiv.org/abs/2401.03308`, 2024.
(4) B. Steinberg, *Topology and monoid representations*, `https://arxiv.org/abs/2306.16379`, 2023.
(5) R. Exel and B. Steinberg, *Subshift semigroups*, `https://arxiv.org/abs/1908.08315`, 2019.
(6) J.-C. Birget, J. Rhodes and B. Steinberg, *Global local covers*, `https://arxiv.org/abs/1904.01372`, 2019.
(7) R. Exel and B.Steinberg, *Higher rank graphs, k-subshifts and k-automata*, `https://arxiv.org/abs/1809.04932`, 2018
(8) S. Margolis and B. Steinberg, *The algebra of the Catalan monoid as an incidence algebra: A simple proof*, `https://arxiv.org/abs/1806.06531`, 2018.
(9) R. Exel and B. Steinberg, *Representations of the inverse hull of a 0-left cancellative semigroup*, `https://arxiv.org/abs/1802.06281`, 2018.
(10) B. Steinberg, *On the Burnside-Brauer-Steinberg theorem*, `http://arxiv.org/abs/1409.7632`, 2014.
(11) B. Steinberg, *Topological dynamics and recognition of languages*, `http://arxiv.org/abs/1306.1468`, 2013.
(12) J. McCammond, J. Rhodes and B. Steinberg, *Geometric semigroup theory*, arXiv:1104.2301, 2011.
(13) B. Steinberg, *An elementary proof that subgroups of free groups are free*, arXiv:1006.3833, 2010.

Dissertation

- "Decidability and Hyperdecidability of Joins of Pseudovarieties," University of California at Berkeley, 1998.
- Supervised by Professor John Rhodes.

GRANTS

- Dynamics Through the Viewpoint of Self-Similar Algebras: Topological Markov Chains and Self-Similar Groups
  - Principal Investigator: Benjamin Steinberg (City College of New York)
  - Co-PI's: Efren Ruiz (University of Hawaii), Adam Dor-On (Haifa University, funded by BSF)
  - Granting Agency: NSF
  - Purpose: Research Grant
  - Dates: 2025–2028
  - Amount: $199,890 (this is my part.)
- Coordination: A twisted groupoid approach to algebra and functional analysis
  - Principal Investigator: Becky Armstrong (Victoria University of Wellington)
  - Associate Investigator: Benjamin Steinberg (City College of New York)
  - Granting Agency: Marsden Fund (Wellington, NZ)
  - Purpose: Research grant for early career PI.
  - Dates: 2025–2027
  - Amount: $360,000 NZD ($201,913 USD)
- Graded Symmetry in Algebra and Analysis
  - Principal Investigator: Roozbeh Hazrat (Western Sydney University)
  - Co-Principal Investigators: Soren Eilers (University of Copenhagen) and Benjamin Steinberg (City College of New York)
  - Granting Agency: Australian Research Council
  - Purpose: Discovery Project
  - Dates: 2023–2025
  - Amount: $417,000 AUD ($295,084 USD)
- Algebras associated to monoids and etale groupoids with applications
  - Principal Investigator: Benjamin Steinberg (City College of New York)
  - Granting Agency: Simons Foundation
  - Purpose: Collaboration Grant
  - Dates: 2021–2026
  - Amount: $42,000
- Dynamics, operator algebras and rings
  - Principal Investigators: Benjamin Steinberg (City College of New York)
  - Granting Agency: Fulbright Scholarship Board
  - Purpose: Visit to Brazil for four months
  - Dates: 2018–2019
  - Amount: $20,000
- Etale groupoid algebras
  - Principal Investigators: Benjamin Steinberg (City College of New York)
  - Granting Agency: PSC-CUNY
  - Purpose: PSC-CUNY Traditional A Grant
  - Dates: 2017–2018
  - Amount: $3,500
- The algebraic analysis of Markov chains
  - Principal Investigators: Anne Schilling (UC Davis – declined) and Benjamin Steinberg (City College of New York)
  - Granting Agency: NSA
  - Purpose: Mathematical Sciences Program Research Grant.
  - Dates: Spring 2016–2018.
  - Amount: $61,565.
- The algebraic analysis of Markov chains

  - Principal Investigators: Benjamin Steinberg (City College of New York)
  - Granting Agency: PSC-CUNY
  - Purpose: PSC-CUNY Traditional A Grant
  - Dates: 2015–2016
  - Amount: $3,500
- On the growth of finitely presented inverse semigroups and languages forbidding finite number of words
  - Principal Investigators: Lev Shneerson (Hunter College) and Benjamin Steinberg (City College of New York)
  - Granting Agency: CUNY Collaborative Incentive Research Grant (CIRG) Program
  - Purpose: Collaboration Grant
  - Dates: 2014–2015
  - Amount: $19,595
- Representation theory of monoids and algebras arising in algebraic combinatorics
  - Principal Investigators: Stuart Margolis (Bar-Ilan) and Benjamin Steinberg (City College of New York)
  - Granting Agency: United States-Israel Binational Science Foundation
  - Purpose: Collaboration Grant
  - Dates: 2013–2017
  - Amount: $136,800
- Semigroups in automata, representation theory and probability
  - Principal Investigator: Benjamin Steinberg (City College of New York)
  - Granting Agency: Simons Foundation
  - Purpose: Collaboration Grant
  - Dates: 2012–2017
  - Amount: $35,000
- Geometric and Asymptotic Group Theory with Applications
  - Principal Investigator: Benjamin Steinberg (City College of New York)
  - CO-PI: Vladimir Shpilrain (City College of New York)
  - Granting Agency: NSF, Division of Mathematical Sciences (Topology)
  - Purpose: Conference Funding
  - Dates: 2013
  - Amount: $25,000
- Mercator Visiting Professor
  - Principal Investigator: Benjamin Steinberg (Carleton University)
  - CO-PI: Markus Lohrey (University of Leipzig, Germany)
  - Granting Agency: Deutsche Forschungsgemeinschaft (DFG)
  - Purpose: To perform research and teach an advanced course
  - Dates: 12/2008–8/2009
  - Amount: €75,600
- Automata in semigroup theory, group theory and analysis
  - Principal Investigator: Benjamin Steinberg (Carleton University)
  - Granting Agency: NSERC
  - Purpose: Operating Grant
  - Dates: 2007–2012
  - Amount: 85,000 CAD
- Algorithmic problems in semigroup and automata theory
  - Principal Investigator: Benjamin Steinberg (Carleton University)
  - Granting Agency: NSERC
  - Purpose: Operating Grant

  - Dates: 2003–2007
  - Amount: 54,000 CAD
- Network efficiency, reliability and security
  - Principal Investigator: Irwin S. Pressman (Carleton University)
  - My role: Co-investigator
  - Granting Agency: NSERC
  - Purpose: Equipment Grant
  - Dates: 2003
  - Amount: 65,000 CAD
- Carleton startup grant
  - Principal Investigator: Benjamin Steinberg (Carleton University)
  - Granting Agency: Carleton University
  - Dates: 2002–2008
  - Amount: 20,000 CAD
- Combinatorics and geometry in semigroup theory
  - Principal Investigator: Pedro V. Silva (University of Porto)
  - My role: Co-investigator
  - Granting Agency: Foundation of Science and Technology of Portugal
  - Purpose: Research Grant
  - Dates: 2001–2004
  - Amount: €30,000
- Algorithmic problems in finite semigroup theory
  - Principal Investigator: Jorge Almeida (University of Porto)
  - My role: Co-investigator
  - Granting Agency: Foundation of Science and Technology of Portugal
  - Purpose: Research Grant
  - Dates: 2000–2002
  - Amount: €20,808
- Combinatorial and geometric theory of groups and semigroups and its applications to computer science
  - Principal Investigator: Stuart Margolis (Bar-Ilan University)
  - My role: Co-investigator
  - Granting Agency: INTAS
  - Purpose: Research Grant
  - Dates: 1999–2002

  Amount: €9,000 for our group in Portugal
- NSF NATO Postdoctoral Fellowship
  - Principal Investigator: Benjamin Steinberg
  - Granting Agency: NSF (with NATO support)
  - Purpose: Postdoctoral Fellowship
  - Dates: 1999-2000
  - Amount: $37,900

EDITORIAL WORK

- Managing Editor for International Journal of Algebra and Computation, 2015–present.
- Series Editor for SpringerBriefs in Mathematics, 2011–present.
- Editor for Semigroup Forum, 2003–present.
- Editor for Discussiones Mathematicae - General Algebra and Applications, 2016–present.
- Editor for International Journal of Algebra and Computation, 2011–2015.

- Reviewer for Math Reviews, 2003–present.
- Review for Zentralblatt, 2012–present.
- Reviewer for NSA, NSERC, EPSRC and several smaller international research foundations.
- Referee for: IMRN, Duke J. Math., Memoirs of the AMS, Trans. Amer. Math. Soc., Bull. Lond. Math. Soc., Proc. Lond. Math. Soc., Algebra and Number Theory, Discrete Math., Geom. Dedicata, J. Algebraic Combinatorics, Theory of Computing Systems, J. Algebra, Internat. J. Algebra Comput., J. Pure Appl. Algebra, Comm. Algebra, Theoret. Comput. Sci., L'Enseignement Mathématique, Monatsh. Math., Semigroup Forum, Indian J. Math., Studia Sci. Math. Hungar., J. Inst. Math. Jussieu, Groups Geom. and Dyn., Annales des sciences mathématiques du Québec, Glasgow Mathematical Journal, Canadian Math. Bull., Czech Math. J., as well as for many conference proceedings in both Mathematics and Computer Science.

PRESENTATIONS

Plenary Lectures at Major Meetings

- "Monoids in Representation Theory, Markov Chains, Combinatorics and Operator Algebras," Plenary Speaker, 63^{rd} Annual Meeting of the Australian Mathematical Society, Dec. 2019, Melbourne, Australia.

Mini-courses

- "The representation theory of finite monoids," London Mathematical Society – EPSRC Durham Symposium "Permutation groups and transformation semigroups," Durham, England, July 2015.
- "Membership problems in groups," Workshop on Topics in Algorithmic and Geometric Group and Semigroup Theory, part of the Thematic Semester "Geometric, Combinatorial and Computational Group Theory" of the CRM, August 2010.
- "Groups generated by automata," Masaryk University, Brno, Czech Republic, May 4–6, 2009.

Presented Papers – 50+ minutes

- "The homology of groupoids associated to self-similar groups"
  - Leavitt Path Algebras at 20, Colorado Springs, May 2025.
- "On von Neumann regularity of ample groupoid algebras"
  - Combinatorial *-algebras, Oberwolfach, Germany, March 2024.
- "The representation theory of the monoid of affine transformations of a vector space over a finite field"
  - Invited Speaker
  - The Conference on Theoretical and Computational Algebra 2023, Pocinho, Portugal, July, 2023.
- "Simplicity of inverse semigroup and etale groupoid algebras"
  - Invited Speaker
  - Algebra, Geometry and C*-algebras workshop, ICMS, Edinburgh, June 2023.
- "Pointlike sets and separation: a personal perspective"
  - Invited Speaker
  - 25th International Conference on Developments in Language Theory, Porto, Portugal, August 2021 (delivered virtually).
- "A Lyndon's Identity Theorem for one-relator monoids"
  - Invited Speaker

  - Binghamton University Graduate Conference in Algebra and Topology, Binghamton, November 2020.
- "Higher rank graphs, k-subshifts and k-automata"
  - Invited Speaker
  - Higher rank graphs: geometry, symmetry, dynamics, ICMS, Edinburgh, Scotland, July 2019.
- "Homological Finiteness in One-Relator Monoids"
  - Invited Speaker
  - Algorithmic Problems in Group Theory, Dagstuhl, Germany, March 2019.
- "Lamplighter Groups as Bireversible Automaton Groups"
  - Invited Speaker
  - The Elementary Theory of Groups and Group Rings and Related Topics, New York, USA, November 2018.
- "Diagonal preserving isomorphisms of etale groupoid algebras"
  - Invited Speaker
  - ICM Operator Algebras Satellite Conference - ICMOA, Florianopolis, Brazil, July 2018.
- "Reconstructing étale groupoids from their algebras"
  - Invited Speaker
  - Facets of Irreversibility: Inverse Semigroups, Groupoids, and Operator Algebras, Oslo, Norway, December 2017.
- "Random Walks on Rings and Modules"
  - Invited Speaker
  - All Kinds of Mathematics Remind Me of You, Conference to Celebrate the 70th Anniversary of Peter J. Cameron, Lisbon, Portugal, July 2017.
- "Etale groupoids, inverse semigroups and their algebras"
  - Invited Speaker
  - Workshop on Applications of Operator Algebras: Order, Disorder and Symmetry, Edinburgh, Scotland, June 2017.
- "Etale groupoid algebras"
  - Invited Speaker
  - III Workshop on Dynamics, Numeration, Tilings and Graph Algebras, Florianopolis, Brazil, March 2017.
- "Model theory, pseudofinite words and profinite completions of the free monoid"
  - Invited Speaker
  - Geometric and Asymptotic Group Theory with Applications 2016, Hoboken, USA, June 2016.
- "Model theory and the free pro-aperiodic monoid"
  - Invited Speaker
  - International Conference on Semigroups and Automata 2016, Lisbon, Portugal, June 2016.
- "Profinite groups in automata theory and monoid theory: a survey"
  - Invited Speaker
  - ALFA '15, Bordeaux, France, June 2015.
- "Etale groupoid algebras"
  - Invited Speaker
  - Fields Institute Workshop on Groups, Rings and Group Rings, St. Catherines, Canada, July 2014.
- "Combinatorics, topology and homological invariants of finite dimensional algebras"
  - Invited Speaker

  - Advances in Representation Theory of Algebras (ARTA III), Montreal, Canada, June 2014.
- "Associative algebras associated to étale groupoids and inverse semigroups"
  - Invited Speaker
  - Partial Actions and Representations Symposium, Gramado, Brazil, May 2014.
- "Self-similar semigroups and finite state Markov chains"
  - Invited Speaker
  - Groups Acting on Rooted Trees and Around, Paris, France, February 2014.
- "The Karoubi envelope and the classification of Markov Dyck shifts"
  - Invited Speaker
  - Flow Equivalence of Graphs, Shifts, and C^*-algebras, Copenhagen, Denmark, November 2013.
- "Combinatorial topology and the global dimension of left regular bands"
  - Invited Speaker
  - International Conference on Geometric, Combinatorial and Dynamics aspects of Semigroup and Group Theory, Ramat Gan, Israel, June 2013.
- "Quasivarieties and hyperplane arrangements"
  - Invited Speaker
  - The 4th Novi Sad Algebraic Conference, Novi Sad, Serbia, June 2013.
- "Rational subsets and submonoids of groups: noncommutative integer programming"
  - Invited Speaker
  - Questions, Algorithms, and Computations in Abstract Group Theory, Braunschweig, May 2013.
- "Inverse semigroup algebras and etale groupoid convolution algebras"
  - Invited Speaker
  - Semigroups and Applications, Uppsala University, Sweden, September 2012.
- "Poset cohomology, Leray numbers and the global dimension of left regular bands"
  - Invited Speaker
  - XXII Brazilian Algebra Meeting, Salvador, Brazil, July 2012.
- "Profinite groups associated to symbolic dynamical systems"
  - Invited Speaker
  - Manhattan Algebra Day, CUNY Graduate Center, NY, December 2011.
- "Etale groupoids and inverse semigroups"
  - Invited Speaker
  - Fields Sponsored Extended Workshop on Groups and Group Actions in Operator Algebra Theory, Ottawa, July 2010.
- "Semigroup representation theory and the Černý conjecture"
  - Invited Speaker
  - International Conference on Semigroups and Related Topics, Porto, Portugal, July 2009.
- "Matrix mortality and the Cerny-Pin conjecture"
  - Invited Speaker
  - 13th International Conference on Developments in Language Theory, Stuttgart, Germany, June 2009.
- "Symbolic dynamics, profinite groups and profinite monoids"
  - Invited Speaker
  - International Conference on Geometric and Combinatorial Methods in Group Theory and Semigroup Theory, Lincoln, Nebraska, May 2009.
- "On the irreducible representations of inverse semigroups"
  - Invited Speaker

  - Workshop on Groups, Semigroups and Applications, Lisbon, Portugal, April 2009.
- "Recent progress on the structure of free profinite monoids"
  - Invited Speaker
  - Equational Theory of Regular Languages, Brno, Czech Republic, on March 2009.
- "Cerny's conjecture and group representation theory"
  - Invited Speaker
  - School on Algebraic Theory of Automata, Lisbon, Portugal, September 2008.
- "Marked products of languages and matrix representations"
  - Invited Speaker
  - 2nd International Conference on Language and Automata Theory and Applications, Tarragona, Spain, March 2008.
- "Möbius functions and semigroup representation theory"
  - Invited Speaker
  - Conference on Representations of Algebras, Groups and Semigroups, Tel Aviv, Israel, January 2008.
- "Submonoids and rational subsets of right-angled Artin groups"
  - Fields Workshop in Asymptotic Group Theory and Cryptography, Ottawa, December 2007.
- "Möbius functions and semigroup representation theory"
  - Workshop on Group Embeddings, Banff, September 2007.
- "The submonoid and rational subset membership problems for graph groups"
  - AMS Special Session on Languages and Groups Stevens Institute, Hoboken, NJ, April 2007.
- "Rational codes and free clopen submonoids of free profinite monoids"
  - CRM Workshop: Recent Progress in Combinatorics on Words, Montreal, March 2007.
- "Ordered 2-complexes and inverse semigroups"
  - Invited Speaker
  - Category Theory Octoberfest 2006, October 2006, Ottawa.
- "The representation theory of inverse semigroups – revisited."
  - Semigroups, categories and automata, October 2006, York, UK.
- "Finite categories and the decomposition theory of finite monoids"
  - Invited Speaker
  - Categories and Semigroups Workshop, June 2006, Calgary.
- "Profinite groups in automata and semigroup theory"
  - Fields Workshop on Profinite Groups and Applications, August 2005.
- "Random walks on groups generated by automata"
  - Invited Speaker
  - International Conference on Semigroups and Languages in Honour of the 65th Birthday of Donald B. McAlister, Lisbon, Portugal, July 2005.
- "The spectra of lamplighters and related groups via automata"
  - Geometric and Asymptotic Methods in Group Theory, Banff, Canada, June 2005.
- "The Krohn-Rhodes theorem on decomposition of finite automata (I) and (II)"
  "A class of automata groups generalizing lamplighter groups"
  "Spectral theory"
  - Advanced Course on Automata Groups, Barcelona, Spain July 2004.
- "The $\mathfrak{q}$-theory of finite semigroups"
  - Invited speaker
  - International Meeting on Semigroup Theory and Related Topics, Braga, Portugal, June 2003.
- "A constructive proof of $\mathbf{PG} = \mathbf{BG}$"

  - Invited speaker
  - Workshop on Semigroups and Automata, Montreal, Canada, March 2003.
- "The $\mathfrak{q}$-theory of finite semigroups"
  - International Workshop on Semigroups, Automata, and Formal Languages, Crema, Italy, June 2002.
- "A topological approach to inverse semigroups"
  - Invited speaker
  - Thematic Term on Semigroups, Algorithms, Automata and Languages, Coimbra, Portugal, July 2001.
- "Categories as Algebra II"
  - Invited speaker
  - Colloquium on Semigroups, University of Szeged, Szeged, Hungary, July 2000.
- "Free products of LERF groups: Revisited"
  - Invited speaker
  - Conference on Geometric and Combinatorial Methods in Group Theory and Semigroup Theory, University of Nebraska, Lincoln, May 2000.
- "On the equation $\mathbf{J} * \mathbf{H} = \mathbf{J} \mathbin{ⓜ} \mathbf{H}$ for pseudovarieties of groups $\mathbf{H}$"
  - The Second Semigroup Conference of St. Petersburg, Russian State Hydrometeorological University, St. Petersburg, Russia, June 1999.
- "On iterated semidirect products of pseudovarieties of semigroups with applications to complexity"
  - Invited speaker
  - Conference on Algorithmic Problems in Groups and Semigroups, University of Nebraska, Lincoln, May 1998.

Presented Papers – Shorter talks

- On von Neumann regularity of inverse semigroup rings
  - Algebra and its role in computer science, Lisbon, Portugal, June 2025.
- Simplicity of inverse semigroup algebras – a question of Munn
  - Invited 40 minutes talk for the Special Session on Non-classical Algebraic Structures.
  - National Meeting of the Portuguese Mathematical Society 2021, online, July 2021
- "Bireversible automata generating lamplighter groups"
  - Joint Mathematical Meetings, Denver, USA, January 2020.
- "Report on homological finiteness conditions for one-relator monoids"
  - Joint Mathematical Meetings, Denver, USA, January 2020.
- "Primeness versus primitivity in etale groupoid algebras"
  - II Joint Meeting Spain-Brazil in Mathematics, Cadiz, Spain, December 2018.
- "Model theory and free pro-aperiodic monoids"
  - Spring Eastern Sectional Meeting of the AMS, New York, USA, May 2017.
- "Computing closures in the pro-nilpotent topology on a free group"
  - Spring Eastern Sectional Meeting of the AMS, New York, USA, May 2017.
- "Homological finiteness conditions for one-relator monoids and related monoids"
  - Spring Eastern Sectional Meeting of the AMS, New York, USA, May 2017.
- "Random walks on rings and modules"
  - Fall Western Sectional Meeting of the AMS, Denver, USA, October 2016.
- "The representation theory of the full transformation monoid"
  - Joint meeting of the AMS-EMS-SPM, Porto, Portugal, June 2015.
- "Algorithms for invertible transducers and automaton groups: a retrospective and problems"
  - Joint meeting of the AMS-EMS-SPM, Porto, Portugal, June 2015.

- "The decidability of flow equivalence for shifts of finite type and stable isomorphism for Cuntz-Krieger $C^?$-algebras".
  - Joint Mathematics Meeting, San Antonio, January 2015.
- "Koszul Algebras associated to zonotopes and CAT(0) cube complexes"
  - Winter Meeting of the Canadian Mathematical Society, Ottawa, December 2013.
- "On a conjecture of Karrass and Solitar"
  - Winter Meeting of the Canadian Mathematical Society, Ottawa, December 2013.
- "Synchronizing groups: a survey"
  - Joint Mathematics Meeting, San Diego, January 2013.
- "Poset topology and global dimension of algebras arising in combinatorics"
  - Fall Southeastern Sectional Meeting of the AMS, October 2012.
- "The submonoid membership problem for groups"
  - Joint Mathematics Meetings, Boston, January 2012.
- "Poset topology and left regular bands"
  - Winter meeting of the Canadian Mathematical Society, Toronto, December 2011
- "Combinatorial topology and the global dimension of left regular bands"
  - Winter meeting of the Canadian Mathematical Society, Toronto, December 2011
- "The averaging trick and the Černý conjecture"
  - Developments in Language Theory, London, August 2010.
- "Problems in permutation groups coming from automata theory"
  - Permutation Groups, Banff, July 2009.
- "On transitivity of sequential transducers"
  - Workshop on Automata and Algorithmic Logic, Stuttgart, June 2009.
- "Profinite groups, symbolic dynamics and profinite monoids"
  - Joint Meeting of the American Mathematical Society and the Brazilian Mathematical Society, Rio de Janeiro, Brazil, June 2008.
- "On semigroups with basic complex algebra"
  - Winter Meeting of the Canadian Mathematical Society, London, Canada, December 2007.
- "Möbius inversion, groupoids and inverse semigroup algebras"
  - Summer Meeting of the Canadian Mathematical Society, Calgary, Canada, June 2006.
- "Algebraic combinatorics, semigroup representations and random walks on hyperplane chambers after Ken Brown"
  - Combinatorial and geometric group theory. Vanderbilt University, May 5-10, 2006.
- "Profinite groups, profinite trees, Stallings foldings and finite monoids"
  - Special Session on Geometric Methods in Group Theory and Semigroup Theory, AMS Fall meeting, Lincoln, Nebraska, October 2005.
- "Modular and threshold subword counting and matrix representations of finite monoids"
  - Words 2005, 5^{th} International Conference on Words, 13-17 September 2005, Montreal.
- "Synchronizing groups and automata"
  - Workshop on Semigroups and Automata, a satellite workshop to ICALP 2005, Lisbon, Portugal July 2005.
- "On the spectra of lamplighter groups and Cayley machines"
  - Winter Meeting of the Canadian Mathematical Society, Montreal, Canada, December 2004.
- "On the profinite monoid of closed subsets of a profinite group"
  - Summer Meeting of the Canadian Mathematical Society, Halifax, Canada, June 2004.
- "Join irreducible pseudovarieties, group mapping and Kovács-Newman semigroups"
  - LATIN 2004: Theoretical Informatics, Buenos Aires, Argentina April 2004.
- "The automata group of the Cayley machine of a group"

  - International Conference on Group Theory: combinatorial, geometric, and dynamical aspects of infinite groups, Gaeta, Italy, June 2003.
- "The $\mathfrak{q}$-theory of finite semigroups"
  - Joint meeting of the AMS-UMI, Pisa, Italy, June 2002.
- "Undecidability in extending partial permutations"
  - International Conference on Modern Algebra, Vanderbilt University, Nashville, USA, June 2002.
- "The delay theorem for pointlikes"
  - Workshop on Combinatorics, Semigroups and Words, Kyoto-Sangyo University, Kyoto, Japan, March 2000.
- "Polynomial closure and topology"
  - Third International Colloquium on Words, Languages and Combinatorics, Kyoto-Sangyo University, Kyoto, Japan, March 2000.
- "Geometric automata theory and pseudovariety equations"
  - International Conference on Semigroups, Braga, Portugal, June 1999.
- "Hyperdecidability: examples and counterexamples"
  - First Meeting of the Project Algebra, Geometry, and Combinatorics, Braga, Portugal, June 1997.
- "Parallel computation: The join of pseudovarieties"
  - First International Conference on Semigroups and Algebraic Engineering, Aizu-Wakematsu, Japan, March 1997.

Participation in Workshops

- Higher rank graphs: geometry, symmetry, dynamics ICMS, Edinburgh, Scotland, July 2019.
- Applications of operator algebras: order, disorder and symmetry, ICMS, Edinburgh, Scotland, June 2017.
- Representation Theory, Mittag-Leffler Insitute, Stockholm, Sweden, May 2015.
- Permutation Groups, Banff, Canada, July 2013.
- Permutation Groups, Banff, Canada, July 2009.
- Self-similarity and Branching in Group Theory, Banff, Canada, October 2008.
- Group Embeddings: Geometry and Representations, Banff, Canada, September 2007.
- Selfsimilar Groups and Conformal Dynamics, American Institute of Mathematics, Palo Alto, US, June 2006.
- Geometric and Asymptotic Methods in Group Theory, Banff, Canada, June 2005.
- Automata Groups, Barcelona, Spain, July 2004.
- Automata and Language Theoretic Methods in Combinatorial and Geometric Group Theory, Bar-Ilan University, Ramat Gan, Israel, December 1999.
- Workshop on Inverse Semigroups and Quasicrystals, University of Essex, Colechester, England, July/August 1999.

Talks for Students and General Audiences

- "Groucho Marx, Bertrand Russell, Kurt Godel and Alan Turing: from self-referential paradoxes to undecidability," Carleton Math Undergrad Colloquium, November 2009.
- "When is a number a sum of two squares," Carleton Math Undergrad Colloquium, November 2007.
- "The Platonic Solids," Carleton Math Undergrad Colloquium, March 2007.
- "Self-similarity and art," Boston Museum of Fine Arts, Boston, USA, November 2002.
- "Computability," New Talents in Mathematics Meeting, Portugal, September 2001.

- "The theory of partial symmetry," Forum of Portuguese Researchers, Faro, Portugal, April 2001.
- "Tricks with numbers," University of Porto, Portugal, April 2000.

Seminars

A non-exhaustive list of places where I have given seminars or colloquia includes: University of California at Berkeley, Paris VI, Paris VII, the University of Porto, Simon Fraser, Texas A&M, Carleton University, McGill, University of Ottawa, Ben Gurion University, Bar-Ilan University, University of York (England), University of Newcastle, University of Bangor, University of Lisbon, Instituto Superior Técnico of Lisbon, Centre de Recerca Matemática at Barcelona, University of Brasília, Vanderbilt, University of Texas at El Paso, University of Leipzig, New York Group Theory Seminar, City College of New York, University of Coimbra, University of Stuttgart, University of Tübingen, Université de Québec a Montréal, KTH, University of Uppsala, CUNY Graduate Center, University of South Florida, IMPA, Waterloo University, University of California, Davis, Georgia Tech, University of Colorado Colorado Springs, SUNY Binghamton, Ohio State University, University of Vienna, University of Regina, Rutgers University.

CONFERENCE AND SEMINAR ORGANIZATION

- Co-organizer with M. Kinyon of "Special Session on Recent Trends in Semigroup Theory" of Spring Western Sectional Meeting of the American Mathematical Society, May 2022.
- Scientific Committee for Young Geometric Group Theory X, Newcastle University UK, April 2021.
- Member of the Program Committee for Jewels of Automata: from Mathematics to Applications (AutoMathA 2020), October 2020, Paris, France.
- Member of the Program Committee for LATA 2020 (14th International Conference on Language and Automata Theory and Applications), March 2020, Milan, Italy.
- Co-organizer with M. Kinyon of "Special Session on Recent Trends in Semigroup Theory" of the Joint Mathematical Meetings, January 2020.
- Co-organizer with G. Bazerman, J. Funk, P. Hofstra and N. Yanofsky of "Category Theory Octoberfest 2018", 10/2018.
- Member of the Program Committee for LATA 2018 (12th International Conference on Language and Automata Theory and Applications), April 2018, Ramat Gan, Israel.
- Co-organizer with A. Douglas, D. Kahrobaei, S. Smith of "the New York Applied Algebra Colloquium" at the CUNY Graduate Center, 2014–2018.
- Co-organizer with M. Kinyon of "Special Session on Recent Trends in Semigroup Theory" of Fall Western Sectional Meeting of the AMS, October 2016.
- Co-organizer with J. Meakin, E. Plotkin, M. Sapir, G. Soifer and P. Weil of "the International Conference on Geometric, Combinatorial and Dynamics aspects of Semigroup and Group Theory", Tel-Aviv, June 2013.
- Member of the Program Committee for DLT 2013 (17th International Conference on Developments in Language Theory), June 2013.
- Co-organizer with O. Kharlampovich, A. Miasnikov, V. Shpilrain and A. Ushakov of GAGTA-7 (Geometric and Asymptotic Group Theory with Applications), June 2013.
- Co-organizer with M. Can, Z. Li and S. Wang of the Fields Institute Workshop on "Algebraic Monoids, Group Embeddings and Algebraic Combinatorics", Toronto, July 2012.
- Co-organizer with O. Kharlampovich, R. Gilman, A. Miasnikov and N. Touikan of "Topics in Algorithmic and Geometric Group and Semigroup Theory," a workshop in the CRM thematic semester "Geometric, Combinatorial and Computational Group Theory", Montreal, August 2010.

- Co-organizer with P. Hofstra and J. Funk of the Fields Institute workshop on "Semigroups and Categories", Ottawa, May 2010.
- Co-organizer with M. Neufang of the Canadian Mathematical Society Winter Meeting 2008, Ottawa, December 2008.
- Co-organizer with R. Grigorchuk and Z. Sunik of "Self-Similarity and Branching in Group Theory" Banff (BIRS), October 2008.
- Co-organizer with E. Neher and V. Dlab of the Fields Institute sponsored "Algebra Week," Ottawa, September 2008.
- Co-organizer with L. Renner of a Special Session on "Algebraic Combinatorics, Representations and Geometry" of the Canadian Mathematical Society Winter meeting, Toronto 2007.
- Member of the Programme Committee for Conference AutoMathA 2007 "Automata: from Mathematics to Applications," Palermo, Italy, June 2007.
- Co-organizer with I. Bumagin of the Fields Institute sponsored "Workshop on Geometric Methods in Group Theory," Ottawa, August 2006.
- Organizer of the first Fields-Carleton Lecture series given by D. Saari, Ottawa, April 2006.
- Co-organizer with L. Ribes of the Fields Institute sponsored "Workshop on Profinite Groups with Applications," Ottawa, August 2005.
- Co-organizer of the Joint Carleton-Ottawa University Colloquium, 2005-2006.
- Organizer of the Joint Carleton-Ottawa University Colloquium, 2004–2005.
- Organizer of the Joint Carleton-Ottawa University Algebra Seminar, 2003–2005, 2009–2010.
- Co-organizer of the 53^{rd}, 55^{th}, 57^{th}, 59^{th}, 61^{st}, 63^{rd} and 65^{th} Joint Ottawa-Carleton Algebra Days 2003–2009.
- Co-organizer of the International Conference on Semigroups and Groups in Honor of the 65th Birthday of John Rhodes, Porto, Portugal, June 2002.
- Organizer of the Semigroup Seminar at the University of Porto, 1999–2001 and of the General Seminar, 2001–2002.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Member of the American Mathematical Society, 2012–present.
- Member of the New York Academy of Sciences, 2013.

POSTDOCS SUPERVISED

- Sam van Gool, Marie Curie Postdoctoral Fellow, 2016–2018. Currently at the University of Amsterdam.
- Mark Kambites, Leverhulme Postdoctoral Fellow, 2003–2005. Currently Professor and Head of Pure Mathematics at the University of Manchester.

STUDENTS MENTORED

- Sunil Philip, Ph. D., 2015–2024, CUNY Graduate Center. Thesis: *Categorical chain conditions for etale groupoid algebras*.
- Bridget Brimacombe, Ph.D., Summer 2011, Carleton University. Thesis: *Quivers of incidence algebras of inverse semigroups*.
- Wadii Hajji, Ph.D. (co-supervised with David Handelman, University of Ottawa), Summer 2011, University of Ottawa. Thesis: *Representation theory of compact inverse semigroups*.
- Naomi Lynne Wolfson, M.Sc., Winter 2006, Carleton University. Thesis: *Isometries of Cat(0) metric spaces*.

- David Gains, M.Sc., Summer 2005 (co-supervised with John Poland, Carleton University), Carleton University. Thesis: *Monoid pictures and finite derivation type*.
- Fredrick Arnold, M.Sc., Winter 2005, Carleton University. Thesis: *A linear algebraic approach to synchronizing automata*.
- Sevan Bharathan, M Sc., Scholarship Summer Research Project, 2023.
- Jeremy Weissmann, M Sc., Scholarship Summer Research Project, 2023.
- Jeremy Weissmann, M Sc., Scholarship Summer Research Project, 2022.
- Zachary Simon, M Sc., Rich Scholarship Summer Research Project, 2020.
- Monika Cooney, M Sc., Rich Scholarship Summer Research Project, 2020.
- Monika Cooney, M. Sc., Rich Scholarship Summer Research Project, 2019.
- Jhevon Smith, MA, Rich Scholarship Summer Research Project, 2013.
- Tabitha Ramirez, BS, Rich Scholarship Summer Research Project, 2024.
- Anastasiia Timashova, BS, Rich Scholarship Summer Research Project, 2017.
- Anastasia Khomenko, BS, Rich Scholarship Summer Research Project, 2016.
- Mason Soun, Princeton Undergrad, Summer Research Project, 2014.
- Christina Kevins, Honour's project, Summer 2010.
- Andrew Elkington, Honour's project, Fall 2005.
- James Overton, Honour's project, Summer 2005.
- Zeyu Deng, Honour's project, Winter 2005.
- Chen Lu, Honour's project, Winter 2005.
- Alastair Brockwell, Honour's project (won a prize for his project), Summer 2004.
- External examiner for the Ph.D. theses of: Juan Ignacio García García (University of Granada, Spain 2001); Pascal Tesson (McGill University, Canada 2003); Edite Cordeiro (Universidade do Porto, Portugal 2008), Porfírio Azevedo (University of Brasília, Brazil 2008).
- External examiner for the Master's theses of: Arkadev Chattopadhyay (McGill University, Canada 2004).
- Mentor to Andre Souto for the New Talents in Mathematics program of the Gulbenkian Foundation, Portugal 2001–2002.

CURRENT STUDENTS AND POSTDOCS

- Junjie Chen, Ph. D., 2021–.

ADMINISTRATIVE EXPERIENCE

- City College of New York, Chair of Pure Mathematics Committee, 2024–present.
- City College of New York, Mathematics, Department Secretary, 2022–present.
- CUNY Graduate Center, Mathematics Admissions Committee, 2023.
- CUNY Graduate Center, Mathematics Executive Committee, 2021–2022.
- City College of New York, Mathematics Graduate Advisor, 2013–2018.
- City College of New York, Mathematics Executive Committee, 2012–2017.
- City College of New York, Mathematics Hiring Committee, 2012–2013.
- Panel for the PSC-CUNY Research Award Program, 2012–2014.
- Member of the Mathematics Evaluation Committee for the *Fonds québécois de la recherche sur la nature et les technologies* for research in teams, 2010.
- Member of Carleton School of Maths and Stats Hiring Committee 2010–2011.
- Chair of the Carleton School of Maths and Stats Research Committee 2010–2011.
- Chair of the Carleton School of Maths and Stats Math Program Committee 2009–2010.
- Vice-chair of Carleton School of Maths and Stats Math Retention Committee 2009–2010.
- Graduate Director of the Carleton School of Maths and Stats 2007–2008.

- Member of the Corporation, The Fields Institute 2004–2007.
- Search Committee for the Director of the School of Maths and Stats 2007.
- Chair of the Carleton School of Maths and Stats Planning Committee 2006–2007.
- Chair of the Carleton School of Maths and Stats Research Committee 2004–2006.
- Carleton University Representative to the Fields Institute 2004–2006.
- Member of Carleton School of Maths and Stats Hiring Committee 2003–2004.
- Member of Steering Committee of the *Centro de Matemática da Universidade do Porto*, a research center at the University of Porto, Portugal 2001–2002.
- Reviewed grant proposals for NSA and NSERC.

COURSES TAUGHT

- Distinguished Professor, City College of New York City/CUNY Graduate Center (Fall 2024–present)
  - Elements of Linear Algebra, Fall 2025.
  - Bridge to Advance Mathematics, Spring 2025.
  - Elements of Linear Algebra, Fall 2024.
  - Bridge to Advance Mathematics, Spring 2024.
  - Elements of Linear Algebra, Fall 2023.
- Professor, City College of New York City/CUNY Graduate Center (Fall 2012–Spring 2023)
  - Elements of Linear Algebra, Spring 2023.
  - Bridge to Advance Mathematics, Fall 2022.
  - Elements of Linear Algebra, Fall 2022.
  - Graduate Algebraic Topology, Spring 2022.
  - Bridge to Advance Mathematics, Fall 2021.
  - Elements of Linear Algebra, Fall 2021.
  - Graduate Algebra II at the Graduate Center, Spring 2021.
  - Elements of Linear Algebra, Spring 2021.
  - Bridge to Advance Mathematics, Fall 2020.
  - Elements of Linear Algebra, Fall 2020.
  - Graduate Algebraic Topology, Spring 2020.
  - Bridge to Advance Mathematics, Spring 2020.
  - Graduate Algebra I, Fall 2019.
  - Elements of Linear Algebra, Fall 2019
  - Graduate Algebraic Topology, Spring 2018.
  - Elements of Modern Algebra, Spring 2018.
  - Elements of Combinatorics, Fall 2017.
  - Graduate Algebra II at the Graduate Center, Spring 2017.
  - Undergraduate Linear Algebra, Spring 2017.
  - Bridge to Advance Mathematics, Fall 2016.
  - Graduate Algebraic Topology, Spring 2016.
  - Undergraduate Abstract Algebra, Spring 2016.
  - Elements of Calculus, Fall 2015.
  - Undergraduate Abstract Algebra, Spring 2015.
  - Graduate Algebra I at the Graduate Center, Fall 2014.
  - Graduate Algebraic Topology, Spring 2014.
  - Graduate Algebra I, Fall 2013.
  - Graduate Algebra II, Spring 2013.
  - Graduate Algebra I, Fall 2012.
  - Elements of Combinatorics, Fall 2012.
- Associate Professor, City College of New York City (Fall 2011–Summer 2012):

  - Graduate Algebraic Topology, Spring 2012.
  - Calculus I, Spring 2012.
  - Graduate Combinatorial Analysis, Fall 2011.
- Associate Professor, Carleton University (Fall 2004–Winter 2011):
  - Algebraic Topology, Winter 2011.
  - Linear Algebira for Engineers, Winter 2011.
  - Group Theory, Fall 2011.
  - 2^{nd}-year Abstract Algebra, Fall 2011.
  - 2^{nd}-year Abstract Algebra, Winter 2010.
  - 3^{rd}-year Abstract Algebra for Computer Scientists, Winter 2010.
  - Theory of Automata, Fall 2009.
  - Graduate Algebra I, Fall 2009.
  - Algebraic Theory of Automata, Winter 2009, taught at the Computer Science Department of the University of Leipzig as a Mercator Visiting Professor.
  - Group Representation Theory, Winter 2008.
  - Group Theory, Fall 2008.
  - Algebraic Topology, Winter 2007.
  - Theory of Automata, Winter 2007.
  - Linear Algebra I (two sections), Fall 2006.
  - 2^{nd}-year Abstract Algebra, Winter 2006.
  - 1^{st}-year Honours Algebra, Winter 2006.
  - 1^{st}-year Honours Algebra, Fall 2005.
  - Graduate Algebra I, Fall 2005.
  - Ring Theory, Winter 2005.
  - Discrete Mathematics and Algorithms for Computational Sciences, Winter 2005.
  - Theory of Automata, Fall 2004.
  - Algebraic Theory of Automata and Semigroups, Fall 2004.
- Visiting Professor, University of Leipzig (Fall 2008–Spring 2009):
  - The Algebraic Theory of Automata, Spring 2009.
- Assistant Professor, Carleton University (Fall 2002–Winter 2004):
  - 2^{nd}-year Abstract Algebra, Winter 2004.
  - Linear Algebra for Engineers, Winter 2004.
  - Theory of Automata, Fall 2003.
  - Graduate Level Group Theory, Fall 2003.
  - Ring Theory, Winter 2003.
  - Linear Algebra for Engineers, Winter 2003.
  - Theory of Automata, Fall 2002.
- Auxiliary Professor, University of Porto (Spring 2001–Spring 2002):
  - 4^{th}-year Algebra: Combinatorial Group Theory, Spring 2002.
  - Calculus I (two sections), Fall 2001.
  - Algebra I, Fall 2001.
  - Complex Analysis, Fall 2001.
  - 4^{th}-year Algebra: Combinatorial Group Theory, Spring 2001.
  - Linear Algebra II, Spring 2001.
- Lecturer, University of California at Berkeley (Summer 1998):
  - Introduction to Abstract Algebra, Summer 1998.
- Graduate Student Instructor, University of California at Berkeley (Fall 1994–Spring 1998):
  - Linear Algebra and Differential Equations, Fall 1997/Spring 1995.
  - Theory of Computation, Spring 1997.
  - Discrete Mathematics, Fall 1996.

  - One Variable Calculus, Fall 1995.
  - One Variable Calculus, Fall 1994.
- Summer School Teacher, Lowell High School, San Francisco (Summer 1996):
  - Geometry 1, Summer 1996.
  - Geometry 2, Summer 1996.