Seth Chaiken, Assoc. Prof. of CS Emeritus, 01/01/2026 schaiken@albany.edu

Professional (and other) Education:
The Cooper Union, Physics, B.S. 1973
Massachusetts Institute of Technology, Mathematics, Ph.D. 1980.
non-credit MOOCs from MIT EdX on Biology (incl. 3 certificates), and Machine Learning, 2020-present. audited graduate physics, math and electrical engineering courses at UAlbany, 2015-2020. MOOCs on functional programming, Chinese, and music.
Appointments:

2015 – present: Associate Professor Emeritis of Computer Science, College of Nanotechnology, Science, and Engineering (and predecessors), University at Albany, SUNY.

1980 – 2015: Assistant, after 1986, Associate Professor. of Computer Science, University at Albany - SUNY.

2008 Visiting fellow at the Program for Combinatorics and Statistical Mechanics, Newton Institute for the Mathematical Sciences, Cambridge, England.

1973 – 1980: Teaching and Research Assistant, MIT Math. Dept; Programmer (part-time, 1977-1980), Applicon Incorporated, Burlington, Mass.

Biology and Mathematics

1. "Surveying Michael Levit's Latent Platonic Space" University at Albany Mathematics and Statistics Dept, Analysis and Data Science Colloquium, Nov 18, 2025,

Electric Circuits Motivated Mathematics

1. "An Exterior Algebra Valued Tutte Function on Linear Matroid Pairs Lightning Talk" ICERM Matroids, Rigidity, and Algebraic Statistics Workshop, Mar 17 - 21, 2025, https://chaikens.github.io/Presentations/LightningBrown2025Article.pdf.

2. "Extensor Valued Tutte Functions on Linear Matroids or Their Pairs" poster presented at the Discrete Math Workshop, Smith College, May 6, 2023.

3. "Restricted or ported tutte decomposion and analogs of all-minors laplacian expansions" invited to AMS Sectional Meeting Special Session on Algebraic Combinatorics, Binghamton Univ, Oct 2019, 1151-05-225.

4. "Ported or Relative Oriented Matroids and Electric Circuits" invited to Special Session on Matroids, *Forty-Sixth Southeastern International Conference on Combinatorics*, Graph Theory, and Computing, Boca Raton, March 2-6, 2015.

5. "The Tutte polynomial of a ported matroid", *J. Combinatorial Theory ser. B*, vol. 46, pp. 96–117, 1989.

6. "A combinatorial proof of the all minors matrix tree theorem", *SIAM J. on Algebraic and Discrete Methods*, vol. 3 1982, pp. 319–329.

7. "Matrix tree theorems", *J. Combinatorial Theory A*, vol. 24, 1978, pp. 377–381 (with D.J. Kleitman).

8. "Ported Tutte Functions of Extensors and Oriented Matroids", (2006) preprint on http://arxiv.org/abs/math.CO/0605707

9. "Hybrid Matrix Minors from Tableau Applied to a Multiport Generalization of NDR Related to Stability", *IEEE International Symposium on Circuits and Systems*, May 1998.

10. "Oriented Matroid Pairs, Theory and an Electric Application", *Contemporary Mathematics*, vol. 197, pp. 313–331, 1996.

11. "The All-Minors VCCS Matrix Tree Theorem, Half-resistors and Applications in Symbolic Simulation", *IEEE International Symposium on Circuits and Systems*, May 1995, (with P. Narendran).

12. "Extremal length and width of blocking polyhedra, Kirchhoff spaces and multiport networks." *SIAM J. Algebraic Discrete Methods*, 8 (1987), no. 4, 635–645.

Queens Publications (all with C. Hanusa and T. Zaslavsky)

1. "A q-queens problem. I. General theory" *Electron. J. Combin.*, 21 (2014), no. 3, P3.33, 28 pp.

   "A q-queens problem. II. The square board" *J. Algebraic Combin.*, 41 (2015), 619-642.

   "A q-queens problem III. Nonattacking partial queens" *Australasian J. Combin.*, 74 (2019), no. 2, 305-331.

   "A q-queens problem IV. Attacking configurations and their denominators" *Disc. Math.*, 343 (2020), no. 2, 111649.

   "A q-queens problem V. Some of our favorite pieces: queens, bishops, rooks, and nightriders" *J. Korean Math. Soc.*, 57 (2020), no. 6, 1407-1433.

   "A q-queens problem. VI. The bishops' period" *Ars Math. Contemp.*, 16 (2019), no. 2, (2019), 549-561.

2. "Nonattacking queens in a rectangular strip" *Ann. Combinatorics*, 14 (2010), no. 4, 419-441.

Computer Systems Publications

1. "Validated observation and reporting of microscopic performance using Pentium II counter facilities," Haleh Najafzadeh and S. Chaiken, in *WOSP '04: Proceedings of the 4th International Workshop on Software and Performance*, 2004, pp. 161–165, ACM Press, http://doi.acm.org/10.1145/974044.974070.

2. "Toward a framework for source code instrumentation measurement validation," Haleh Najafzadeh and S. Chaiken, in *WOSP '05: Proceedings of the 5th International Workshop On Software and Performance*, 2005, pp. 123–130, ACM Press, http://doi.acm.org/10.1145/1071021.1071033.

   (these report results form Ph.D. dissertation supervision with Linux kernel modifications and experiments.)

Computational Geometry

1. Y. C. Wee (Ph.D. student), S. Chaiken and S. S. Ravi, "Rectilinear steiner tree heuristics and minimum spanning tree algorithms using geographic nearest neighbors", *Algorithmica*, Vol. 12, pp. 421–435, 1994.

2. "On the Geographic Nearest Neighbor Problem", *Information Processing Letters*, vol. 34, 1990, pp. 71-76 (with Y.C. Wee and D.E. Willard).

3. "An Optimal Parallel L_1 Metric Voronoi Diagram Algorithm", *Proceedings of the Second Canadian Conference in Computational Geometry,* , August 1990 (with Y. C. Wee).

4. "Computing Geographic Nearest Neighbors Using Monotone Matrix Searching", *Proceedings of the 18th ACM CSC Conference,* , Washington, D.C., February 1990, (with Y.C. Wee and D.E. Willard).

Miscellaneous Publications

1. "An application of P_4-free graphs in theorem proving", (3rd Int. Conf. on Combinatorial Mathematics, June 1985), *Ann. New York Academy of Sciences*, vol. 555, 1989, pp. 106-121 (with Neil Murray and Erik Rosenthal).

2. "An optimal diagonal tree code", *SIAM J. on Algebraic and Discrete Methods*, vol. 4 1983, pp. 42–49 (with A.K. Dewdney and P.J. Slater).

3. "Covering regions by rectangles." *SIAM J. Algebraic Discrete Methods*, 2 (1981), no. 4, 394–410, (with Daniel J. Kleitman, Michael Saks, and James Shearer)

4. "Possible degree sequences of strongly 2-connected digraphs", *Ann. New York Academy of Sciences*, vol 319, 1979, pp. 119-p129 (2nd Int. Conf. on Combinatorial Mathematics, N.Y., 1979) (with D.J. Kleitman and S.-R.Y. Li, from my dissertation).

Synergistic Activities:

1. Participant in Fall 2024 Big Ideas in Dynamics Hybrid Learning Conference, group reading of "Factoring Gleason Polynomials Modulo 2" by Sarah Koch et. al, `https://sites.google.com/view/bigideasindynamics/fall-2024`

2. **Current** Regular participant on online colloquia series: `https://topos.institute/events/topos-colloquium/`, `https://sites.google.com/view/gocc-combinatorics`.

3. **Current** Referee for `https://www.mdpi.com/journal/axioms`.

4. **Current** Yearly judge for the New York Upstate Junior Science and Humanites Symposium, and its succussors sponsored by University at Albany.

5. Conference organization assistant and webmaster for "Women in Algebra and Combinatoric", April 28-30, 2023; and "Northeast Women in Algebra and Combinatorics Conference Celebrating the 50th Anniversary of the Association of Women in Mathematics", Nov. 20-21, 2021, UAlbany Math. Dept.

6. Tutor for competitive programming at the Albany Chinese Community Center, 2018-2019.

7. Member of the steering committee for the NSA and NSF funded Northeast Combinatorics Network (originally Discrete Mathematics in the Northeast day conference series) since its inception in 2002, and co-organized Albany conferences in it 2002, 2006, and 2020. Co-organized Twelfth New York Academy of Sciences Graph Theory Day (held at UAlbany, 1986).

8. From 2014-2016, I've been a member of a planning committee to develop a new engineering college to include an ABET accreditable Computer Engineering major and eventually graduate studies, recruit faculty, to be the first such major of the University at Albany. This college's successor `https://www.albany.edu/cnse` now encompasses the University's programs in nanoscience, engineering and computer science.

9. I led a number of Computer Science teaching innovations in my department: CS1 (intro for majors) clicker, online prob. solving, peer-instructed lab, custom compiled textbook. Grad/Ugrad Operating Systems: flipped classroom and current Linux kernal code case study labs. "Programmed Computing, Worlds and Problems" taught in 2006-7 with "Alice" material and in 2010 with IPRE/Scribbler/Python robotics for both a team-based major honors course and a non-major service course.

10. Dept. Undergrad. Assoc. chair and coordinator for Honors College and the Computer Science Disciplinary Honors major.

11. (Relatively) recent teaching: Operating systems, undergraduate introductory, systems, data structures, and assembly language programming, graduate and undergraduate computer architecture and graphics. Less recent: Computation theory, advanced, combinatorial and undergraduate algorithms, computational geometry, discrete structures, Linux kernel source study seminar.

12. Computer Science Ph.D. Dissertation supervisions: Young Cheul Wee (1989, "Efficient algorithms for proximity problems"), Haleh Najafzadeh (2005, "Towards a framework for source code instrumentation measurement validation"), Michael Kolta (2008, "Machine Learned Melody Matching using Strictly Relative Musical Abstractions", 2011 patent 7,962,530 awarded to Dr. Kolta.)

13. Mathematics Field Service: NSF panel service (2009). Referee for *CRC Handbook on the Tutte Polynomial, Entropy, Electronic Journal of Combinatorics, European Journal of Combinatorics, Journal of Combinatorial Theory, Discrete Mathematics, Linear Algebra and its Applications, Journal of Parallel and Distributed Computing, IEEE Transactions on Circuits and Systems, IEEE International Symposium on Circuits and Systems*, reviewer for Math. Reviews.

14. Academic Service: Departmental Undergraduate Program Director and chair of Undergraduate Curriculum Committee. Dept. Computing Committee, Univ. Gen. Ed. advisory committee (former task force member). College Curriculum committee. SUNY state-wide committee for CS major transfers.

    Other: member of Finance Committee and Education/Government Committee of the Capital (Albany) Region United Jewish Federation, (current) University-Community Orchestra cellist and Chorale bass, member campus (independent) Interfaith Center Board of Directors.

    Chaired Comp. Sci. Dept. Graduate Admissions, was acting Unix system administrator. Faculty Council of the College of Arts and Sciences, and Senate Undergraduate Academic Council, Vice-provost's Assessment Committee, Senate Executive Committee, Strategic Planning Committee, University subcommittee on Education of the Master Planning Committee, College of Computing and Information Founding Bill Drafting Committee.

University Senator, membership on Senate Undergraduate Academic Council and General Education Committee, College internal faculty grant evaluation committee, Departmental Library Representitive, local Sigma Xi chapter president.

15. Reader at Marathon Reading of William Kennedy's 1975 novel *Legs*, NY State Writer's Institute, Nov. 4, 2025.