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# CURRICULUM VITAE

# **Rob Schneiderman**

Professor of Mathematics Department of Mathematics Lehman College CUNY http://comet.lehman.cuny.edu/schneiderman/

#### **Education:**

Ph.D., University of California, Berkeley, Mathematics 2001; Dissertation: *4-dimensional Intersection Numbers of Knots and Links in 3-manifolds*; Advisor: Robion Kirby.

B. A. (Summa cum Laude), City University of New York, City College, Mathematics 1994.

#### Employment:

Professor, Department of Mathematics, Lehman College, City University of New York (September 2017-present);

Associate Professor, Department of Mathematics and Computer Science, Lehman College, City University of New York (September 2013-2017);

Assistant Professor, Department of Mathematics and

Computer Science, Lehman College, City University of New York (September 2006-2013);

Postdoctoral Lectureship, Department of Mathematics, University of Pennsylvania (July 2005-July 2006);

Courant Instructor/Assistant Professor, Courant Institute of Mathematical Sciences, New York University (September 2002-July 2005);

National Science Foundation Postdoctoral Fellow, (University of California San Diego) and Visiting Postdoctoral Researcher at Max-Planck-Institute, Bonn, Germany (July 2001-July 2002).

#### **Research Interests:**

*Low-dimensional Topology*: The geometry and topology of 3and 4-dimensional manifolds, obstructions to embedding surfaces in 4-manifolds, invariants of knots and links in 3manifolds.

#### Publications and preprints:

Introduction to Whitney towers, **To appear in Winter Braids** Lecture Notes (2020)

*Clasper concordance, Whitney towers and repeating Milnor invariants*, (with J. Conant and P. Teichner) **Submitted preprint** (2020)

Homotopy versus isotopy: spheres with duals in 4-manifolds, (with P. Teichner) **To appear in Duke Mathematical Journal** (2019)

The group of disjoint 2-spheres in 4-space, (with P.

Teichner) Annals of Mathematics Vol 190 (2019)

*Cochran's beta-invariants via twisted Whitney towers*, (with J. Conant and P. Teichner) **Journal of Knot Theory and its Ramifications** Vol. 26 (2017)

Geometric filtrations of string links and homology cylinders, (with J. Conant and P. Teichner) **Quantum Topology** Vol. 7 Issue 2 (2016)

*Pulling Apart 2-spheres in 4-manifolds*, (with P. Teichner) **Documenta Mathematica** 19 (2014)

*Milnor invariants and twisted Whitney towers*, (with J. Conant and P. Teichner) **Journal of Topology** 7 (2014), no. 1

Universal quadratic forms and untwisting Whitney towers, (with J. Conant and P. Teichner) **Proceedings of the Freedmanfest, G&T Monographs**, 18 (2012)

*Whitney tower concordance of classical links*, (with J. Conant and P. Teichner) **Geometry and Topology** Vol 16 (2012)

*Tree homology and a conjecture of Levine*, (with J. Conant and P. Teichner) **Geometry and Topology** Vol 16 (2012)

*Can one hear the sound of a theorem?*, **Notices of the American Mathematical Society** Vol 58 Issue 07 August (2011), and **Best Writing on Mathematics** Princeton University Press (2013)

*Higher-order intersections in low-dimensional topology*, (with J. Conant and P. Teichner) **Proceedings of the National Academy of Sciences USA** vol. 108, no. 20, (2011)

Stable concordance of knots in 3-manifolds, Algebraic and

Geometric Topology Vol 10 (2010)

*Jacobi identities in low-dimensional topology*, (with J. Conant and P. Teichner) **Compositio Mathematica** 143 Part 3 (2007)

*Whitney towers and gropes in 4-manifolds*, **Transactions of the American Mathematical Society** 358 (2006)

Half-gropes, Simple Whitney towers and the Arf invariant of a knot, **Pacific Journal of Mathematics** Vol 222, No 1, Nov (2005)

*Whitney towers and the Kontsevich integral*, (with P. Teichner) **Geometry and Topology monograph series** Vol 7 (2004)

Algebraic linking numbers of knots in 3-manifolds, Algebraic and Geometric Topology Vol. 3 (2003)

#### Selected Presentations:

Winter Braids X conference, three invited lectures, Pisa Italy (February 2020),

Math Plus Music Quadrivium at the National Museum of Mathematics, NYC (April 2019),

Mathematics/Jazz presentation/performance (University of Georgia, Athens (March 2019),

Conference on 4-manifolds and knot concordance, Max-Planck-Institute for Mathematics, Germany (October 2016),

Workshop at Oberwolfach Mathematics Institute, Germany (May 2014),

Semester on Topology of 4-manifolds, Max-Planck-Institute for Mathematics, Bonn (May 2013),

Low-dimensional topology and High-dimensional Categories, Conference in honor of Michael Freedman, UC Berkeley (June 2011),

Special session on Algebraic and Geometric Topology, AMS sectional meeting, Cornell University (September 2011),

Low-dimensional Topology seminar series on Whitney towers, Max-Planck-Institute for Mathematics, Bonn (November 2010),

Special session on knot theory and related topics, Joint AMS-KMS meeting, Seoul (December 2009),

Special session on geometric topology, AMS sectional meeting, Wesleyan College (October 2008),

4-dimensional Manifolds Workshop at Oberwolfach Mathematics Institute, Germany (August 2006),

Julius Shaneson's Ides of March Topology Festival: Submanifolds, Singular Varieties and Stratified Spaces, Courant Institute (2005),

BANF International Research Station conference on Knots and their manifold stories (May 2003),

Uni-Muenster, Junge Topologen und Neue Topologie conference (2001).

AMS meetings (special session talks): Lyon, special session on Low-dimensional Topology; University of Nevada, Las Vegas, special session on the Topology of links (2001).

Topology seminars: UPenn, CUNY Grad Center, Max-Planck-

Institut-fur-Mathematik, University of Marseille, Uni-Muenchen, Courant Institute, UC San Diego, University of Indiana, Stanford University, UC Berkeley, Barnard College/ Columbia University.

# Teaching Experiences:

Instructor at Lehman College CUNY: Topology (MAT 433/741) REU Supervisor (Topology) Analysis (MAT 320) Foundations of Mathematics (MAT 670), Secondary mathematics from an advanced standpoint (MAT 601) Calculus I, II, and III, (MAT 175, MAT 176, MAT 226), and Business Calculus (MAT 174), Computer Labs for Calculus I and II (MAT 155, MAT 156), Linear Algebra (MAT 313), and Abstract Algebra (MAT 314), Precalculus (MAT 172), and Business Precalculus (MAT 171), Music and Mathematics (Honors seminar).

Instructor at UPenn:

Calculus II, Calculus IV, Linear Algebra, Low-dimensional Topology (grad course).

Instructor at NYU: Topology (grad course), Advanced Calculus, Business Calculus, Calculus, Elementary Statistics, Logic.

Instructor at UC Berkeley:

Multi-variable Calculus (two summers).

Instructor at City College CUNY: Precalculus (two summers).

Co-instructor at UC Berkeley:

Developed and co-taught an experimental Introduction to Topology Course.

Teaching Assistant at UC Berkeley:

All levels of Calculus, Discrete Math, Linear Algebra, Differential Equations (including workshop problem sessions).

# Honors and Awards:

Simons Foundation Collaborative Grants for Mathematicians Award (2017-2021),

Simons Foundation Collaborative Grants for Mathematicians Award (2011-2016),

PSC-CUNY Research Awards (2006-2011),

National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship (2001),

Graduate Student Research Assistantships at UC Berkeley (spring 2000, spring 1998, fall 1998) and UC San Diego (summer 2000);

Chosen to receive Math Department Fellowship, UC Berkeley (spring 1998);

Graduate Student Instructorships, UC Berkeley, (fall 1994spring 2001);

Summer Research Fellowship, UC Berkeley (summer 1995); Emil Post Award CCNY (1994);

Schwarz Scholarship CCNY (1992);

Belden Mathematical Prize CCNY (1991);

National Endowment for the Arts Jazz Performance Fellowship (1987).

# Service:

Served as Chairperson, Lehman College Dept. Mathematics (2019-2020);

Served on multiple committees, Lehman College (2010present);

Mathematics Outreach: multiple presentations/performances on Mathematics and Music (2010-present);

Developed `Summer Math Workshop' for *Pathways to Student STEM Success* program, Lehman College (2017-2020);

Co-organizer of workshop in Low-dimensional Topology at Oberwolfach Mathematics Institute, Germany (May 2014); Music/Math public outreach presentations, Max-Planck-Institute for Mathematics, Bonn Germany (fall 2014) and Hausdorff Research Institute for Mathematics (fall 2010); Course designer/instructor for Mathematics Teacher

Transformation Institute at Lehman College;

Director of NSF-funded Computer Science and Mathematics Scholarship program at Lehman College (2011-2014);

Co-organizer of workshop in Low-dimensional Topology at Mathematical Sciences Research Institute (2008);

Departmental graduate and undergraduate student advisor at Lehman College;

Calculus committee at Lehman College (chair/coordinator); Departmental honors committee (Lehman College); Referee for various mathematics journals;

Referee for various mathematics journals;

Co-organizer special session in Low-dimensional Topology at regional AMS meeting, Courant Institute NYU (2003); Served as mentor for incoming graduate students and helped organize graduate student topology seminar at UC Berkeley.

# Additional personal info:

I came to discover Mathematics after a career playing jazz piano which included recording and performing throughout North America, Europe and Japan. I've found that Mathematics demands the same blend of discipline and creativity as playing improvised music at a high level. I sometimes describe Mathematics as "music that only musicians can hear".

Rob Schneiderman C.V.