

# James Conant

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University of Tennessee	1221 Luttrell St
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AREA: Low dimensional topology: knots (of dimension 1 or 2),  $n$ -manifolds ( $n \leq 4$ ), and their invariants; Geometric group theory: group homology; Combinatorial topology

EMPLOYMENT: **University of Tennessee**, Associate Professor, 2008—Present  
Assistant Professor, 2003 — 2008  
Undergraduate Thesis: Jeffrey Hankins (2007)  
Masters students: Jim Borkowski (2004), Oliver Thistlethwaite (2007), Eric Kim (2007), Matt Dawson (2009)  
Doctoral students: Jon Gray (current)

**Cornell University**, VIGRE Assistant Professor, 2000 — 2003  
Undergraduate thesis: Ben Cooper (2003)

**UC San Diego**, Graduate Teaching Assistant, 1995-2000

EDUCATION UC San Diego, Ph.D 2000, Advisor: Peter Teichner  
Thesis: *A knot bounding a grope of class  $n$  is  $\lceil \frac{n}{2} \rceil$ -trivial*

UC San Diego, MA 1997

Rutgers University, B.A. 1995, Highest Honors, Advisor: Norm Levitt  
Senior Thesis: *Whitehead torsion and simple homotopy type*

HONORS AND SUPPORT 2009 Chancellor's Research and Creative Achievement/Professional Promise Award

2006–2007 College of Arts and Sciences Research and Creative Achievement Award

NSF Grant DMS 0604351, \$108,961 (2006-2009)

NSF Grant DMS 0305012, \$64,532 (2003-2006)

Max Planck Institut Gesellschaft — Supported joint research with Rob Schneiderman and Peter Teichner (Summer 2001)

ARCS Scholar- a stipended award by the San Diego ARCS chapter to support promising graduate research. (1998-2000)

John Bogart Prize- awarded by Rutgers University to top undergraduate mathematics major (1995)

Henry Rutgers Scholar — Rutgers College senior thesis program

$\Phi\eta\Sigma$ , Golden Key and  $\Phi\text{BK}$  honor societies

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### JOURNAL PUBLICATIONS

J. Conant, J. Mostovoy and T. Stanford, “Finite type invariants based on the band-pass and the doubled-delta move,” *Journal of Knot Theory and its Ramifications*, to appear.

J. Conant, “Homotopy approximations to the space of knots, Feynman diagrams, and a conjecture of Scannell and Sinha,” *American Journal of Mathematics* 130 (2008), no. 2, 341–357

J. Conant, “Ornate necklaces and the homology of the genus one mapping class group,” *Bulletin of the London Mathematical Society* 39 (2007), no. 6, 881–891

J. Conant and K. Vogtmann, “Morita classes in the homology of  $\text{Aut}(F_n)$  vanish after one stabilization,” *Groups, Geometry and Dynamics* 2 (2008), no. 1, 121–138

J. Conant, R. Schneiderman and P. Teichner, “Jacobi identities in low dimensional topology,” *Compositio Mathematica* 143 Part 3 (2007) pp.780-810

J. Conant “Chirality and the Conway Polynomial,” *Topology Proceedings*, Volume 30, No. 1, 2006, p.153-162

R. Budney, J. Conant, K. Scannell, D. Sinha, “New perspectives on self-linking,” *Advances in Mathematics* Vol. 191, Issue 1 (2005), Pages 78-113

J. Conant, F. Gerlits and K. Vogtmann, “Cut vertices in commutative graphs,” *Oxford Quarterly Journal*, Vol. 56, No. 3 (2005)

J. Conant and K. Vogtmann, “Morita classes in the homology of automorphism groups of free groups,” *Geom. Topol.*, Vol. 8 (2004) Paper no. 40, pages 1471–1499

J. Conant, “Gropes and the rational lift of the Kontsevich integral,” *Fundamenta Mathematicae*, Vol. 184 (2004), 73–77

J. Conant and P. Teichner, “Grope cobordism and Feynman diagrams,” *Math. Annalen* Vol. 328 (2004), Nos. 1-2, 135-171

J. Conant and P. Teichner, “Grope cobordism of classical knots,” *Topology* Vol. 43, Issue 1 (2004); 119-156

J. Conant and K. Vogtmann, “On a theorem of Kontsevich” *Algebraic and Geometric Topology*, 3 (2003), paper no. 42, pages 1167-1224

J. Conant and K. Vogtmann, “Infinitesimal operations on chain complexes of graphs,” *Math. Annalen*, Vol. 327, No. 3 (2003); 545-573

J. Conant, “Fusion and fission in graph complexes,” *Pac J. Math*, Vol. 209, No.2 (2003), 219–230

J. Conant, “On a theorem of Goussarov,” *J. Knot Theory Ramifications*, Vol. 12 (No. 1) (2003) 47–52

### SUBMITTED PUBLICATIONS

J. Conant and O. Thistlethwaite “Boolean formulae, hypergraphs and combinatorial topology,”

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### COLLOQUIA AND SEMINAR TALKS

Departmental Colloquia (2009): Kansas State University

Departmental Colloquia (2000-2005): Rice, University of Oregon, University of Münster, New Mexico State University, SUNY Geneseo, Virginia Tech, University of Tennessee, UC Davis

Seminar Talks (2009): Cornell University

Seminar Talks (2008): University of California, Berkeley

Seminar talks (2006): Cornell, University of Oregon, Vanderbilt, Tennessee State University

Seminar talks (2000-2005): Columbia, Cornell, UC Berkeley, UC San Diego, UC Riverside, Monmouth, NYU Courant, Ohio State, Rutgers, SUNY Binghamton, SUNY Buffalo, University of Texas, University of Virginia, Yale.

CONFERENCE TALKS “The Topology of Sets of Boolean Formulae,” *Wasatch Topology Conference*, University of Utah; August 2007

“Chirality and the Conway Polynomial,” *Quantum Topology — Contemporary issues and perspectives*, Snowbird, Utah; June 2005

“Chirality and the Conway Polynomial,” *Conference on Low Dimensional Topology*, University of Virginia; December 2004

“A variation on finite type knot invariants,” *Twenty-first Annual Workshop on Geometric Topology*, Milwaukee, WI; June 2004

“On the rational homology of the group of automorphisms of the free group,” Semi-plenary talk, *Spring Topology and Dynamics Conference*, Birmingham, AL; March 2004

“Do Vassiliev invariants distinguish knots?” *Knots in Poland*, Warsaw, Poland; June 2003

“Some remarks on grope cobordism,” *Workshop in quantum topology*, Warwick, England; March 2002

“A Lie bialgebra structure on graphs and graph homology,” *Junge Topologen und Neue Topologie*, Münster, Germany; September 2001

“Grope cobordism of classical knots,” *Knots in Montreal*, Montreal, Canada; April 2001

“Gropes, claspers and Vassiliev invariants,” *Albany Geometric Group Theory Conference*, Albany, NY; October 2000

AMS Special Sessions where I gave talks:

*Geometric Group Theory*, New Orleans, LA; January 2007

*Braids and knots*, Albuquerque, NM; October 2004

*Categories and operads in topology, geometry, physics*, Albuquerque, NM; October 2004

*Low dimensional topology*, Phoenix, AZ; January 2004

*Quantum topology*, Portland, OR; May 2002

*Low dimensional topology*, San Diego, CA; January 2002

*Topology of links*, Las Vegas, NV; April 2001

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SERVICE

University service (2008-2009): Arts and Sciences Advising, Faculty Senate, Teaching Council, Committee for the Campus Environment

Department Service (2008-2009): Honors Day Committee, Tennessee Math Bowl Committee

University Service (2007-2008): Arts and Sciences Advising, Faculty Senate, Teaching Council, Research Council, Committee for the Campus Environment

Department Service (2007-2008): Advisory Committee, Graduate Assistantship Committee, Tennessee Math Bowl Committee

Department Service (2006-2007): Advisory Committee, Graduate Assistantship Committee, Bylaws Committee, Fermat I Committee

Department Service (2005-2006): Graduate Committee, Graduate Assistantship Committee, Fermat I Committee

Department Service (2004-2005): Allen Medal Committee, Undergraduate Committee, Barrett Lectures Committee

Department Service (2003-2004): Allen Medal Committee, Undergraduate Committee

Outreach activities (2009): Participated in UT REU program in summer 2009. Gave public talk on “A history of pi” to Knoxville senior center.

Outreach activities (2007-2008): Participated in University of Tennessee REU, summers 2007 and 2008, gave public talks on “The History of Pi” and “Art and Mathematics” through the Faculty Speakers Bureau

Outreach activities (2006): Gave talk under auspices of Speaker’s Bureau on “Mathematics and Art,” to the Oak Ridge Philosophical Society (Spring 2006)

Outreach Activities (2000-2005): Directed REU project (Summer 2005), Junior Colloquia at Cornell and Tennessee (2001, 2003, 2005), Six week short course for Cornell’s Math Explorer’s club for advanced high school students (April-May 2002)

Conferences co-organized: Barrett Lectures (Spring 2006), Cornell Topology Festival (May 2001, 2002, 2003), Special Session in Low dimensional topology (NYU Spring 2003)

Refereed roughly 3 or 4 papers a year for *GT*, *AGT*, *Topology*, *Math. Annalen*, *Compositio Math*, *IMRN*, *Pac. J. Math*.

Reviewed papers (6 per year) for *Math Reviews* and evaluated NSF proposals (around 3).

Cornell Topology seminar organizer (2002-2003)