

# Curriculum Vitae

## Peter Brinkmann

### Address

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### Education

University of Utah	Ph.D., 2000, thesis title: Mapping Tori of Automorphisms of Hyperbolic Groups
University of Bonn	Dipl.-Math., 1997
University of Tennessee	M.Sc., 1995

### Professional experience

City College of New York & Graduate Center	Assistant Professor of Mathematics (tenure track), since February 2006 Graduate faculty, Computer Science, since Spring 2007
Technische Universität Berlin	Wissenschaftlicher Assistent (C1), September 2004 – January 2006
University of Illinois at Urbana-Champaign	J.L. Doob Research Assistant Professor, August 2000 – August 2004
Max-Planck-Institut für Mathematik, Bonn	Visiting fellow, October 2002 – July 2003
University of Melbourne	Visiting fellow, August – September 2002
University of California, Berkeley	Visiting fellow, July 2000
University of Utah	Teaching fellow, January 1997 – May 2000
McKinsey & Co, Cologne	Summer associate, Fall 1996
Institut Henri Poincaré, Paris	Visiting fellow, Spring 1996
Oak Ridge National Laboratory	Research assistant, 1994–1995

## Publications

- Detecting automorphic orbits in free groups, preprint, August 2007
- Dynamics of free group automorphisms,  
<http://arxiv.org/abs/math/0308199v1>
- Mondrian Music Description Language and Sequencer, *International Computer Music Conference Proceedings*, 2006
- Myriad: Scalable VR Via Peer-to-peer Connectivity, PC Clustering, and Transient Inconsistency, with Ben Schaeffer, George Francis, Camille Goudeseune, Jim Crowell, and Hank Kaczmarski, *Computer Animation and Virtual Worlds* **18**:1, 2006, 1-17
- Myriad: Scalable VR Via Peer-to-peer Connectivity, PC Clustering, and Transient Inconsistency, with Ben Schaeffer, George Francis, Camille Goudeseune, Jim Crowell, and Hank Kaczmarski; *ACM Symposium on Virtual Reality Software and Technology Proceedings*, 2005
- MidiKinesis — MIDI Controllers for (almost) any purpose, *Linux Audio Conference Proceedings*, 2005
- A note on pseudo-Anosov maps with small growth rate, *Exp. Math.* **13**:1, 2004, 49-53
- Splittings of mapping tori of free group automorphisms, *Geometriae Dedicata* **93**, 2002, 191-203
- Gumbie — an automatic GUI generator for Jython, *Dr. Dobb's Journal*, April 2002
- Computing triangulations of mapping tori of surface homeomorphisms, with Saul Schleimer, *Exp. Math.* **10**:4, 2001, 571-581
- Hyperbolic Automorphisms of Free Groups, *Geometric and Functional Analysis (GAFA)*, **10**:5, 2000, 1071-1089
- An Implementation of the Bestvina-Handel algorithm for Surface Homeomorphisms, *Exp. Math.* **9**:2, 2000, 235-240
- Mapping Tori of Automorphisms of Hyperbolic Groups, PhD thesis, University of Utah, 2000
- Perimeter and Coherence According to McCammond and Wise, *Groups - Korea '98*, de Gruyter, 2000, 81-90

- Ein algorithmischer Zugang zur Klassifikation von Flächenhomöomorphismen, Diplomarbeit, University of Bonn, 1997
- Pseudo-Anosov Automorphisms of Free Groups, Master's thesis, University of Tennessee, 1995

### **Selected presentations**

- Visualization Day, "Introducing the VisorLab," CCNY, April 2008
- International Conference on Geometric and Combinatorial Group Theory with Applications: Plenary speaker, "Detecting automorphic orbits in free groups," University of Dortmund, August 2007
- Universitat Autònoma de Barcelona (UAB): "Audiovisual Tools for Research and Education in Mathematics," June 2007
- Rutgers Geometry/Topology Seminar, "Algorithmically improving train tracks," April 2007
- Montreal Geometric & Combinatorial Group Theory Seminar, "Algorithmic aspects of free group automorphisms," February 2007
- Topology & Geometric Group Theory Seminar, Cornell University: "Algorithmically improving train tracks," December 2006
- International Computer Music Conference, New Orleans, Louisiana: "Mondrian Music Description Language and Sequencer," November 2006
- Wasatch Topology Conference, Park City, Utah: "Algorithmically improving train tracks," August 2006
- Linux Audio Conference, Karlsruhe: "MidiKinesis — MIDI Controllers for (almost) any purpose," April 2005
- Universitat Autònoma de Barcelona (UAB): "Algorithmic aspects of free group automorphisms," December 2004
- Topology & Computers 2003, Tokyo Institute of Technology: "Dynamics of free group automorphisms," December 2003
- Albany Group Theory Conference: Main speaker, "Dynamics of free group automorphisms," October 2003
- AMS Spring Eastern Section Meeting, University of Montreal: "Beyond the combination theorem," May 2002

- Kolloquium, University of Osnabrück, “Geometrische Gruppentheorie,” June 2001
- Joint Mathematics Meetings, New Orleans, “Splittings of mapping tori of free group automorphisms,” January 2001
- Group Theory Seminar, University of California at Berkeley: “Hyperbolic automorphisms of free groups,” July 2000
- Knots in Washington 10, George Washington University: “Computing triangulations of mapping tori of surface homeomorphisms,” January 2000
- Geometric Group Theory on the Gulf Coast, University of South Alabama: “Hyperbolic automorphisms of hyperbolic groups,” May 1999
- Spring Topology Conference, Salt Lake City: “Hyperbolic automorphisms of free groups,” March 1999
- Groups Korea 98, Pusan National University: “Perimeter and coherence according to McCammond and Wise,” August 1998

### **Selected software projects**

- Allium: A content management system for academic departments,  
<http://allium.sci.ccny.cuny.edu/>
- Magnus: a special purpose mathematical package for infinite groups, with Gilbert Baumslag and Yegor Bryukhov,  
<http://sourceforge.net/projects/magnus>
- Mondrian: Music description language and sequencer,  
<http://math.sci.ccny.cuny.edu/>
- jReality: Java scene graph for Mathematics, with Charles Gunn, Tim Hoffmann, Holger Pietsch, Markus Schmies, and Steffen Weißmann,  
<http://www.jreality.de/>
- IPROM: Educational software for introductory probability courses,  
<http://www.math.uiuc.edu/iprom/>
- IODE: Educational software for introductory differential equations courses,  
<http://www.math.uiuc.edu/iode/>
- XTrain: A software package for computer experiments with surface homeomorphisms and free group automorphisms,  
<http://math.sci.ccny.cuny.edu/>

## Honors

Max-Planck-Gesellschaft, Germany	10-month research stipend, 2002
Clay Mathematics Institute	Liftoff Grant, summer 2000
University of Tennessee	full exchange scholarship, 1994–95
German National Merit Foundation	scholarship, 1994–97

## Service

- Service to the College
  - Web development for the Department of Mathematics
  - Member of the Core Facilities Committee of the Science Division
- Other professional service
  - Organizer of the REU project (Research Experience for Undergraduates) *illiMath04*, with George Francis, University of Illinois, 2004
  - Producer/executive producer of the MATHEON video project, Technical University of Berlin, 2005
  - Referee for *Annals of Mathematics*, *Inventiones Mathematicae*, *Mathematics Research Letters*, *Transactions of the American Mathematical Society*, *Mathematische Zeitschrift*, *London Mathematical Society*, *Communications in Algebra*, *Geometriae Dedicata*, *Topology and its Applications*, Addison-Wesley-Longman, *Groups, Geometry and Dynamics*