

# Sarah C. Koch

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## Employment

<b>Harvard University</b>	Benjamin Peirce Assistant Professor	2010 – 2013
<b>Harvard University</b>	NSF Mathematical Sciences Research Postdoctoral Fellow	2009 – 2011
<b>University of Warwick</b>	NSF Mathematical Sciences Research Postdoctoral Fellow	2008 – 2009

## Education

<b>PhD</b>	Cornell University, Mathematics Advisor: John H. Hubbard	2002 – 2008
<b>PhD</b>	Université de Provence, Mathematics Advisor: John H. Hubbard	2006 – 2007
<b>MS</b>	Cornell University, Mathematics	2002 – 2005
<b>BS</b>	Rensselaer Polytechnic Institute, Mathematics graduated summa cum laude	1997 – 2001

## Research Interests

Complex dynamics (in one and several variables), Teichmüller theory

## Papers

- \* *Twisted matings and equipotential gluings*, (with X. Buff, A. Epstein)  
Submitted.
- \* *An analytic structure on augmented moduli space*, (with J. H. Hubbard)  
Submitted.
- \* *On a theorem of Kas and Schlessinger*, (with O. Antolín-Camarena)  
Submitted.
- \* *Teichmüller theory and endomorphisms of projective space*  
Submitted.
- \* *Böttcher coordinates*, (with X. Buff, A. Epstein)  
Submitted.
- \* *Iterated monodromy of a two-dimensional map*, (with J. Belk)  
In the tradition of Ahlfors-Bers. V, volume 510 of Contemporary Mathematics. American Mathematical Society, Providence, RI, 2010.
- \* *SaddleDrop: a tool for studying dynamics in  $\mathbb{C}^2$*   
Ramanujan Mathematical Society, Lecture Notes Series, Volume 10, 2010.
- \* *On Thurston's Pullback Map*, (with X. Buff, A. Epstein, K. Pilgrim)  
Complex Dynamics, Families and Friends, AK Peters, 2009.

## Work in Progress

- Maps on compactified moduli space in dimension two*, (with R. Roeder)
- The Thurston multiplier map*, (with X. Buff and A. Epstein)

## Awards and Honors

- \* *NSF Mathematical Sciences Research Postdoctoral Fellowship*, 2008–2011
- \* *Top three finalist, AIM Five-year Fellowship*, 2008
- \* *Robert John Battig Prize in Mathematics*, 2006  
Awarded by the Cornell Mathematics Department for excellence in research.
- \* *NPSC Graduate Research Fellowship*, 2001–2007  
Awarded by the the National Physical Science Consortium for six years of support during graduate study; sponsored by the National Security Agency.

- \* *Bell Labs Graduate Research Fellowship, 2001–2005*  
Awarded by Lucent Technologies for four years of support during graduate study. Award was declined by applicant.
- \* *NSF Graduate Research Fellowship, 2001–2004*  
Awarded by the National Science Foundation for three years of support during graduate study. Award was declined by applicant.

### Conference Lectures

- \* *Dynamics of the Weil-Petersson geodesic flow*, invited speaker; American Institute of Mathematics; Palo Alto, California, June 2012.
- \* *Algebraic Dynamics conference*, invited speaker; UC Berkeley, Berkeley, California, May 2012.
- \* *Dynamics on Moduli Spaces workshop*, invited speaker; ICERM, Providence, Rhode Island, April 2012.
- \* *Ergodic Theory workshop*, invited speaker; University of North Carolina, Chapel Hill, Chapel Hill, North Carolina, March 2012.
- \* *Arithmetic Dynamics workshop*, invited speaker; ICERM, Providence, Rhode Island, March 2012.
- \* *Dynamical Systems in Algebraic and Arithmetic Geometry*, invited speaker; AMS Special Session; Joint Meetings of the AMS and the MAA, Boston, Massachusetts, January 2012.
- \* *Dynamical Systems in Algebraic and Arithmetic Geometry Session*, invited speaker; Joint Meetings of the AMS and the MAA, Boston, Massachusetts, January 2012.
- \* *Polynomial Matings conference*, invited speaker; Université Paul Sabatier; Toulouse, France, June 2011.
- \* *First international conference on topological methods in dynamical systems*, invited speaker; IMECC-UNICAMP, Campinas, SP, Brazil, June 2011.
- \* *Workshop in Arithmetic Dynamics*, invited speaker for two lectures; University of Georgia, Athens, Georgia, May 2011.
- \* *Friends of the Harvard Mathematics Department*, invited speaker; Harvard University, Cambridge, Massachusetts, March 2011.
- \* *Trends in Complex Dynamics; a conference celebrating John Milnor*, invited speaker; BIRS, Banff, Canada, February 2011.
- \* *Quasiconformal Mappings, Riemann Surfaces, and Teichmüller Spaces*, invited speaker; Syracuse, New York, October 2010.
- \* *MathFest 2010*, invited speaker, Pittsburgh, Pennsylvania, August 2010.
- \* *Algebra and Dynamics*, invited speaker for two lectures; University of Illinois at Chicago, Chicago, Illinois, May 2010.
- \* *Topology and Dynamics*, invited speaker; Mississippi, March 2010.
- \* *Several Complex Variables Workshop*, invited speaker; University of Michigan, Ann Arbor, Michigan, December 2009.
- \* *Dynamics Day*, invited speaker; Kyoto University, Kyoto, Japan, September 2009.
- \* *The 21st Rolf Nevanlinna Colloquium*, invited speaker; Kyoto University, Kyoto, Japan, September 2009.
- \* *Advances in Low-Dimensional Dynamics*, invited speaker; Stony Brook University, Stony Brook, New York, June 2009.
- \* *Advances in low-dimensional dynamics*, invited speaker; SUNY Stony Brook, New York, June 2009.
- \* *Complex dynamics: several complex variables*, invited speaker; BIRS, Banff, Canada, March 2009.
- \* *Trends and developments in complex dynamics*, invited speaker; MFO, Oberwolfach, Germany, October 2008.
- \* *The Fourth Ahlfors-Bers Colloquium*, invited speaker; Rutgers University, Newark, New Jersey, May 2008.
- \* *42nd Annual Spring Topology and Dynamics Conference*, invited speaker; University of Wisconsin, Milwaukee, Wisconsin, March 2008.
- \* *Groups Generated by Automata*, invited speaker; Centro Stefano Franscini, Ascona, Switzerland, February 2008.
- \* *Teichmüller spaces and iterating the Thurston algorithm*, invited speaker; Université de Cergy-Pontoise, Cergy-Pontoise, France, February 2008.

- \* *Connections for women: Teichmüller theory and Kleinian groups*, invited speaker; MSRI, Berkeley, California, August 2007.
- \* *Joint Meetings of the American Mathematical Society and the Sociedad Matemática Mexicana*, invited speaker; special session on holomorphic dynamics, Zacatecas, Mexico, May 2007.
- \* *International Workshop on Teichmüller theory and Moduli Problems*, invited speaker; Harish-Chandra Research Institute, Allahabad, India, January 2006.

### Noted Colloquium and Seminar Lectures

- Geometry/Topology Seminar*, Yale University; New Haven, Connecticut, May 2012.  
*Geometry Seminar*, Indiana University; Bloomington, Indiana, May 2012.  
*Complex Analysis Seminar*, CUNY; New York, New York, April 2012.  
*Department Colloquium*, Tufts University; Medford, Massachusetts, April 2012.  
*Research Seminar*, ICERM, Providence, Rhode Island, March 2012.  
*Department Colloquium*, Indiana University-Purdue University; Indianapolis, Indiana, January 2012.  
*Dynamics Seminar*, Boston University; Boston, Massachusetts, October 2011.  
*Dynamics & Geometry Seminar*, Harvard University; Cambridge, Massachusetts, September 2011.  
*Dynamics Seminar*, Cornell University; Ithaca, New York, April 2011.  
*Topology and Geometry Seminar*, University of Maryland; College Park, Maryland, April 2011.  
*Dynamics & Geometry Seminar*, Harvard University; Cambridge, Massachusetts, April 2011.  
*Women in Math Lecture*, MIT; Cambridge, Massachusetts, November 2010.  
*Department Colloquium*, University of Minnesota; Minneapolis, Minnesota, September 2010.  
*Dynamics Seminar*, Indiana University-Purdue University; Indianapolis, Indiana, June 2010.  
*Geometry & Topology Seminar*, California Institute of Technology; Pasadena, California, May 2010.  
*Faculty Colloquium*, Harvard University; Cambridge, Massachusetts, April 2010.  
*Dynamics & Geometry Seminar*, Harvard University; Cambridge, Massachusetts, April 2010.  
*Complex Analysis Seminar*, CUNY; New York, New York, February 2010.  
*Dynamics Seminar*, Boston University; Boston, Massachusetts, November 2009.  
*Dynamics & Geometry Seminar*, Harvard University; Cambridge, Massachusetts, October 2009.  
*Dynamics Seminar*, Jacobs University; Bremen, Germany, April 2009.  
*Colloquium Speaker*, Mathematics Institute, Göttingen, Germany, April 2009.  
*Dynamics Seminar*, Université Paul Sabatier; Toulouse, France, January 2009.  
*Dynamics Seminar*, RUK; Roskilde, Denmark, December 2008.  
*Dynamics Seminar*, University of Bristol; Bristol, United Kingdom, December 2008.  
*Topology and Geometry Seminar*, University of Warwick; Coventry, United Kingdom, November 2008.  
*Dynamics Seminar*, University of Chicago; Chicago, Illinois, April 2008.  
*COOL Seminar*, Institut Henri Poincaré; Paris, France, February 2008.  
*Dynamics & Group Theory Seminar*, Texas A&M; College Station, Texas, November, 2007.  
*Dynamics Seminar*, SUNY Stony Brook; Stony Brook, New York, October 2007, April 2006.  
*Dynamics Seminar*, Cornell University; Ithaca, New York, September 2007, September 2005.  
*Dynamics Seminar*, University of Warwick; Coventry, United Kingdom, May 2007.  
*Dynamics Seminar*, Queen Mary, University of London; London, United Kingdom, May 2007.  
*Dynamics Seminar*, University of Liverpool; Liverpool, United Kingdom, April 2007.  
*Dynamics Seminar*, Université Paul Sabatier; Toulouse, France, March 2007, May 2006.  
*Teichmüller Theory Seminar*, Université de Provence; Marseille, France, December 2006.  
*Dynamics Seminar*, Université de Provence; Marseille, France, September 2006.

### Teaching Experience

- \* *Instructor; Harvard University, Fall 2011 & Spring 2012*  
MATH 25a & MATH 25b, Honors Linear Algebra and Real Analysis
- \* *Instructor; Harvard University, Spring 2011*  
MATH 296, Complex Dynamics and Fractal Groups
- \* *Instructor; Harvard University, Fall 2010*  
MATH 130, Classical Geometries

- \* *Instructor; Harvard University, Fall 2009*  
MATH 121, Linear Algebra and Applications
- \* *Instructor; Cornell University, Fall 2007*  
MATH 111, Calculus I

### Other Activities

- \* *Co-organizer of the conference Moduli Spaces Associated to Dynamical Systems (with Laura DeMarco, Curtis McMullen, and Joe Silverman), ICERM, April 2012*
- \* *Co-organizer of the Dynamics and Geometry seminar; Harvard University, 2011–2012 (with Vaibhav Gadre)*
- \* *USA/Canada Mathcamp Participant; invited to teach Complex Dynamics at Mathcamp, a summer program for mathematically talented high school students; Reed College, Portland, Oregon, July 2011.*
- \* *Co-organizer of the conference Trends in Complex Dynamics (with Bob Devaney), Clay Math Institute, May 2011*
- \* *Assistant Director of Graduate Studies, Harvard University, 2010–present*
- \* *NSF panelist, Spring 2010, Spring 2011*
- \* *Invited speaker; math talk for undergraduates, CUNY, New York, Spring 2010.*
- \* *Member of the Graduate Admissions Committee for the Department of Mathematics, Harvard University, 2009–present*
- \* *Organizer for the Dynamics Seminar; Cornell University, 2007–2008*

### Undergraduate theses advised

Harrison Pugh, Harvard University, 2009–2010  
 Adrian Sanborn, Harvard University, 2010–2011  
 Benjamin Dozier, Harvard University, 2011–2012

### References

Curtis T. McMullen, Harvard University	ctm@math.harvard.edu
John H. Hubbard, Cornell University, Université de Provence	jhh8@cornell.edu
Joe Silverman, Brown University	smillie@math.cornell.edu
John Smillie, Cornell University	jean-c.yoccoz@college-de-france.fr
William Thurston, Cornell University	buff@picard.ups-tlse.fr
Xavier Buff, Université Paul Sabatier	saw@math.umd.edu
Scott Wolpert, University of Maryland	mitsu@math.kyoto-u.ac.jp
Mitsuhiro Shishikura, Kyoto University	laurent.bartholdi@gmail.com
Robin Gottlieb ( <i>teaching reference</i> ), Harvard University	gottlieb@math.harvard.edu