

# CURRICULUM VITAE

**Michael Wolf**

## Personal

| Born 29 January 1960, Philadelphia, PA

## Education

| Stanford University, Ph.D., 1986  
| Yale University, B.S. (Mathematics, Philosophy), 1981

## Areas of Research

| Teichmüller Theory, Harmonic Maps, Minimal Surfaces, Global Differential Geometry

## Fellowships and Honors

2012 | Fellow of the American Mathematical Society (Inaugural Class)  
2013 | George R. Brown Award for Superior Teaching (Rice Campus-wide teaching prize)  
1991-95 | Alfred P. Sloan Research Fellow  
1987-91 | NSF Mathematical Sciences Postdoctoral Research Fellow  
1985-86 | Alfred P. Sloan Doctoral Dissertation Fellow

## Professional Appointments

2012- | Founding Director, Rice Emerging Scholars Program  
2006-11 | Residential College Master, Rice University  
2005-09 | Chair, Department of Mathematics, Rice University  
1999- | Professor, Rice University  
Spring, 2015 | Member, MSRI  
March, 2013 | Invited Professor, Tsinghua University (Beijing)  
Fall, 2007 | Member, MSRI  
2005 | Invited Professor, Université de Tours  
1995 | Member, Max Planck Institut  
June, 1995 | Member, MSRI  
1993-4 | Research Professor, MSRI  
1993-99 | Associate Professor, Rice University  
1988-93 | Assistant Professor, Rice University  
1986-88 | C.L.E. Moore Instructor, M.I.T.

## Editorial Positions

2010-2014	Editorial Board (Geometric Analysis), <i>Proc. Amer. Math. Soc.</i>
	—Coordinating Editor, Geometry and Topology
2002-	Editorial Board, <i>Bull. Amer. Math. Soc.</i>
2001-	Associate Editor, <i>J. Geom. Anal.</i>
2002-3	Associate Editor, <i>Walter Rudin Book Series, McGraw-Hill</i>

## Advisory Positions

2015	Participant, Nat. Acad. of Sci. Panel: Undergraduate Research
2004, '06,	NSF Panels
'07, '12, '13	
2007	NSF Workshop: Educating Math. Sci. Workforce in 21 <sup>st</sup> Century
2014-17	Amer. Math. Soc. Committee on National Speakers (for Joint Meetings)

## Professional Activities

2014	Scientific Committee, Intensive Period on Teichmüller Theory and 3-Manifolds, Pisa
2012	Co-Organizer, KerckhoffFest, Luminy
2008-15	Co-I, Rice VIGRE Program
2005-9	PI, Rice VIGRE Program
2010	Co-Organizer, WolpertFest, Univ. Maryland
2008-11	Chair, Organizing Board, Ahlfors-Bers Colloquium
2001-8	Organizing Board, Ahlfors-Bers Colloquium
2007-09	Sigma Xi National Distinguished Lecturer
'90, '96,	Co-Organizer, Texas Geometry and Topology Conference, Houston, TX
'97, '00, '15	
2005	Co-Organizer, Harvey-Polking Fest, Rice University
2005	Co-Organizer, AIM Conference on Global Theory of Minimal Surfaces
2004	Co-Organizer, IId IberoAmerican Congress on Geometry, Salamanca, Spain
2004	Co-Organizer, AMS Special Session on Geometric Variational Problems, Houston, TX,
2002	Co-Organizer, AMS Special Session on Flat Structures, Moduli Spaces and Minimal Surfaces, Portland Oregon
2001	Co-Organizer, Clay Mathematics Institute Summer School on the Global Theory of Minimal Surfaces, Berkeley, CA
2001	Co-Organizer, IInd Iberoamerican Congress on Geometry, Guanajuato, Mexico,
1996	Co-Organizer, Undergraduate Conference on the Calculus of Variations, Houston, TX,
1992	Co-Organizer, Regional Geometry Institute Summer School and Research Program in Geometry and Nonlinear PDE, Park City, UT
1991	Invited Participant, National Academy of Sciences' Symposium on Frontiers of Science

## Principal Talks

- 2016 Conf. on Holomorphic Differentials, African Inst. of Math. Sci. (Cape Town), Pavia (Italy), IWH conference on Higgs bundles (Heidelberg), NUS-IMS Conference on Geom. Structures (Singapore)
- 2015 UCDavis, UC Berkeley, UCSanta Cruz, Pavia (Italy), Newton Institute (Cambridge, England), Conference on Higher Teichmüller theory (Heidelberg)
- 2014 Paris-Sud (Orsay), GEAR Retreat (Maryland), Northwestern, Tsinghua-Sanya Group Action Forum
- 2013 Maryland, Tsinghua University (Beijing) [mini-course], Beijing University, Yale, Conference on Variational Problems and PDE (Granada), Park City Math. Institute, Conference on Higher Teichmüller theory (Aarhus), ICERM Conference on Geometric Structures
- 2012 AMS Special Session, Boston, MA; Univ. Chicago, Symposium on Minimal Surfaces, New York, NY; CUNY; Stanford; CRM conference on Higher Teichmüller-Thurston theory (Montreal)
- 2011 Oberwolfach, Rutgers, UTPan-American
- 2010 Univ. of Houston; Conference on Geometry, Topology and Dynamics of Character Varieties, Singapore; University of Illinois, Chicago; Conference on Geometric Structures in Dimensions 2 and 3, Autrans, France
- 2009 CBMS Conference on Weil-Petersson Geometry, CCSU (Connecticut), 2009; Tulane University; Murray State University (Sigma Xi)
- 2008 Southeast Geometry Seminar, Georgia Tech.; Pacific Northwest Geometry Seminar, Stanford ; Portland State Univ
- 2007 KIAS conference on Geometric Analysis, Seoul; Brown; Introductory Workshop on Teichmüller Theory, Ann Arbor
- 2006 Canaryfest, Ann Arbor MI; Notre Dame; Chinese Acad. of Sci. School of Math. Sci ; Intl. Conf. on Discrete Groups, Beijing; Intl. Conference on Teichmüller Theory and Vector Bundles, Allahabad, India
- 2005 University of Georgia; AIM Conference on Moduli Spaces of Minimal Surfaces; Université de Tours (3 talks), France; Princeton; Wesleyan University (CT)
- 2004 Summer School on Minimal Surfaces, Paris; (3 lectures); Pacific Northwest Geometry Seminar, Salt Lake City, Utah
- 2003 Miniconference on Teichmüller Theory, Chicago; University of Oklahoma Karcher Colloquium, Oklahoma; Newton Institute (Klein. Gps. Wkshp.), Cambridge, England; AMS-RSME Special Session, Seville, Spain; Granada, Spain; AMS Special Session, Indiana; Southern California Geometric Analysis Seminar, UCSD
- 2002 Invited Address, AMS Western Sectional Meeting, Portland; California Institute of Technology; XII Escola de Geometria Diferencial, Goiania, Brazil; AMS Special Session, Ann Arbor,
- 2001 Clay Institute Summer School on Minimal Surfaces (3 talks); University of Chicago; SUNY-Stonybrook; Rutgers; IInd Iberoamerican Congress on Geometry, Guanajuato, Mexico
- 2000 Texas A&M University; University of Minnesota; Universität Bonn; Amherst College; Valley Geometry Seminar, UMass
- 1999 Midrasha Mathematics, Hebrew University, Jerusalem; Bar-Ilan University, Tel Aviv; Indiana University

## Principal Talks, cont.

1998	MSRI-Stanford; Purdue University; University of Michigan; Chinese University of Hong Kong; University of Chicago; University of Illinois (Chicago); Washington University of St. Louis (Roever Colloquium); University of Houston
1997	SMM Special Session on Complex and Functional Analysis, (Panoramic Talk) Oaxaca, Mexico; Ahlfors Celebration, Stanford University
1996	Texas A&M; University of Massachusetts; University of Chicago
1995	Conference on Complex Analytic Aspects of Teichmüller Spaces, Northhampton, MA; Conference on the Calculus of Variations, Tegernsee Germany; Universität Bonn; University of Illinois (Chicago); University of Chicago; MSRI, Hyperbolic 3-Manifolds and Conformal Dynamics Conference
1994	Cornell; CUNY; MSRI, Harmonic Maps Conference
1993	University of California, Davis; Nevanlinna Colloquium, University of Michigan
1992	University of Washington; Oberwolfach Conference on Teichmüller Theory; Conference on Low-Dimensional Topology, Knoxville, TN; RGI conference on Differential Geometry and Nonlinear PDE, Park City, UT; Pacific Northwest Geometry Seminar, University of Utah
1991	MIT; University of Maryland; AMS Special Session on Low Dimensional Geometry, Philadelphia, PA
1990	Special Session on Moduli Spaces, Albuquerque; AMS Summer Institute on Differential Geometry, UCLA
1989	Texas Geometry and Topology Conference, Austin; AMS Institute on Riemann Surfaces, Arcata; AMS Special Session on Moduli Spaces, Boulder
1988	Princeton; Harvard; Cal. Inst. of Tech.; MSRI Harmonic Maps Conf.; University of Maryland
1987	University of Maryland; University of Conn. (Storrs); Ruhr-Universität, Bochum; CUNY Grad. Center
1986	UC San Diego; University of Maryland

## Students

1991	George Stockton, M.A.
1998	Nancy Cunningham, Ph.D.
1999	Lorette Stone, Ph.D.
2003	Robert Huff, Ph.D.
2003	Zheng Huang, Ph.D.
2007	Soomin Kim, Ph.D.
2009	Casey Douglas, Ph.D.
2009	Matthew McClelland, Ph.D.
2012	Evelyn Lamb, Ph.D.
2012	Renee Laverdiere Ph.D.
2014	Qionglin Li Ph.D.
2016	Andrew Huang Ph.D.
2016	Jorge Acosta Ph.D.
progressing	Xian Dai, Charles Ouyang

## Publications

1. The Teichmüller Theory of Harmonic Maps, *J. Differential Geom.* **29** (1989), 449–479.
2. Infinite Energy Harmonic Maps and Degeneration of Hyperbolic Surfaces in Moduli Space, *J. Differential Geom.* **33** (1991), 487–539.
3. High Energy Degeneration of Harmonic Maps Between Surfaces and Rays in Teichmüller Space, *Topology* **30** (1991), 517–540.
4. (with S. Wolpert) Real Analytic Structures on the Moduli Space of Curves, *Amer. J. Math.* **114** (1992), 1079–1102.
5. (with B. Zwiebach) The Plumbing of Minimal Area Surfaces, *J. Geom. & Physics*, **15** (1994), 23–56.
6. Harmonic Maps from Surfaces to  $\mathbb{R}$ -Trees, *Math Zeit.*, **218** (1995), 577–593.
7. Harmonic Maps from a Surface and Degeneration in Teichmüller Space, in Proceedings of “Low Dimensional Topology”, Knoxville, 1992, International Press Co. Ltd, Cambridge, MA, 1994, p. 217–239.
8. Review of “Teichmüller Theory in Riemannian Geometry” by A.J. Tromba, *Bull. Amer. Math Soc.* **29** (2) (1993), 285–290.
9. Review of “Teichmüller Theory in Riemannian Geometry” by A.J. Tromba, *Bull. London Math Soc.*, **26** (1994), 315–316.
10. (with H. Masur) Teichmüller space is not Gromov Hyperbolic, *Ann. Acad. Sci. Fenn.*, **20** (1995), 259–267.
11. On the Existence of Jenkins-Strebel Differentials Using Harmonic Maps from Surfaces to Graphs, *Ann. Acad. Sci. Fenn.*, **20** (1995), 269–278.
12. Irregular Homotopies of Harmonic Maps of Surfaces. (abstract appears in *Vorlesungsreihe, Analysis-Seminar SS1994- WS 1995/6*, Universität Bonn, 1997, 89–91).
13. On Realizing Measured Foliations Via Quadratic Differentials of Harmonic Maps to  $\mathbb{R}$ -trees, *J. D’Analyse Math.*, **68** (1996), 107–120.
14. (edited with R. Hardt) Nonlinear Partial Differential Equations and Differential Geometry, Inst. Adv. Stud./Amer. Math. Society, Providence, RI, 1996.
15. (with R. Hardt) Harmonic Extensions of Quasiconformal Maps to Hyperbolic Space, *Indiana J. Math.*, **46** (1997), 155–163.

## Publications, cont.

16. Measured Foliations and Harmonic Maps of Surfaces, *J. Differential Geom.*, **49**(1998), 437-467.
- 17.(with M. Weber) Minimal Surfaces of Least Total Curvature and Moduli Spaces of Plane Polygonal Arcs, *Geom& Funct. Anal.*, **8**(1998),1129-1170.
- 18.(with R. Hardt) Harmonic Extensions of Quasi-Conformal Maps to Hyperbolic Space, in “Harmonic Morphisms, Harmonic Maps, and Related Topics” (C.K. Anand et al, ed.), Chapman and Hall, Boca Raton, 1999, p. 147-152.
19. (with B. Farb) Harmonic Splittings of Surfaces, *Topology*, **40** (2001), 1395-1414.
20. (with M. Weber) Teichmüller Theory and Handle Addition for Minimal Surfaces, *Annals of Math.*, **156** (2002), 713–795.
- 21.(with K. Scannell) The Grafting Map of Teichmüller Space, *Jour. Amer. Math. Soc.* **15** (2002), 893-927.
- 22.(with H. Masur) The Weil-Petersson Isometry Group, *Geom. Ded.*, **93** (2002), 177–190.
23. Flat Structures, Teichmüller theory, and Handle Addition for Minimal Surfaces, Proceedings of the Clay Institute 2001 Summer School on the Global Theory of Minimal Surfaces, (Hoffman et al, editors), Amer. Math. Soc., 2005.
24. Minimal Surfaces, Flat Cone Spheres, and Moduli Spaces of Staircases, in *Six Themes on Variation*, (R. Hardt, ed.), Student Mathematical Library, vol. 26, Amer. Math. Soc, Providence, RI, 2004.
25. (with M. Weber and D. Hoffman) An Embedded Genus-One Helicoid, *Annals of Math*, **169**(2009) no. 2, 347-448.
26. (with M. Weber and D. Hoffman) An Embedded Genus-One Helicoid, *Proc. Nat. Acad. Sci.*, **102**(2005),16566-16568.
27. (with W.H. Meeks III) Minimal Surfaces with the Area Growth of Two Planes; the case of Infinite Symmetry, *Jour. Amer. Math. Soc.*, **20**(2007), 441-465.
28. Minimal Graphs in  $\mathbb{H}^2 \times \mathbb{R}$  and their projections, *Pure & Appl. Math Quarterly J.*, **3**(2007), 881-896.
29. (with D. Dumas) Projective Structures, Grafting and Measured Laminations, *Geometry & Topology*, **12**(2008).

## Publications, cont.

30. (Edited with Mario Bonk, Jane Gilman, Howard Masur, and Yair Minsky) In the tradition of Ahlfors-Bers. V. Papers from the 4th Ahlfors-Bers Colloquium held at Rutgers University, Newark, NJ, May, 2008. *Contemporary Mathematics*, **510**. American Mathematical Society, Providence, RI, 2010. xii+329 pp.
31. (with Petra Bonfert-Taylor, Richard D. Canary, Gaven Martin, and Edward C. Taylor), Ambient Quasiconformal Homogeneity of Planar Domains, *Ann. Acad. Sci. Fenn.*, **35**(2010), no. 1, 275-283.
32. The Weil-Petersson Hessian of Length on Teichmüller Space, *J. Differential Geom.*, **91**(2012), 129-169.
33. (with Matthias Weber) Handle Addition for Doubly-Periodic Scherk Surfaces, *J. Reine Angew. Math.*, **670** (2012), 173-216.
34. (Edited with Alan Reid, Ursula Hämenstadt, Rubí Rodríguez, Steffen Rohde) In the tradition of Ahlfors-Bers. VI. Papers from the 5th Ahlfors-Bers Colloquium held at Rice University, Houston, TX March, 2011. *Contemporary Mathematics*, American Mathematical Society, Providence, RI, 2013.
35. (with Jon Chaika and Howard Masur) Limits in  $\mathcal{PMF}$  of Teichmüller Geodesics, *J. Reine Angew. Math.*, to appear.
36. (with David Dumas) Polynomial Cubic Differentials and Convex Polygons in the Projective Plane, *Geom. & Funct. Anal.*, **6** (2015), 1734-1798.
37. (with Yunhui Wu) Uniform Bounds for Weil-Petersson Curvatures, submitted.
38. (with Subhojoy Gupta) Quadratic Differentials, half-plane structures, and harmonic maps to graphs, *Comment. Math. Helv.*, **91** (2016), 317-356.
39. (with Richard Wentworth) Surface group representations to  $SL(2, \mathbb{C})$  and Higgs bundles with smooth spectral data, *Geometry & Topology*, to appear.
40. (with Subhojoy Gupta) Meromorphic quadratic differentials with complex residues and spiralling foliations, Proceedings of the 6th Ahlfors-Bers Colloquium held at Yale University, 2014. *Contemporary Mathematics*, American Mathematical Society, Providence, RI, to appear.