

Marc Culler

<http://marc-culler.info>

ADDRESS *Mathematics, Statistics, and Computer Science (M/C 249)*
University of Illinois at Chicago
851 South Morgan St.
Chicago, IL 60607-7045, USA

email: culler@math.uic.edu
phone: 312-996-4841

EDUCATION **University of California at Berkeley**
Ph.D. 1978
M.A. 1975
University of California at Santa Barbara
B.A. 1973

EMPLOYMENT
2015 - **Professor Emeritus**, University of Illinois at Chicago
1993 - 2015 **Full Professor**, University of Illinois at Chicago
1986 - 1993 **Associate Professor**, University of Illinois at Chicago
1982 - 1986 **Assistant Professor**, Rutgers University
1979 - 1982 **G.C. Evans Instructor**, Rice University

HONORS
2015 Fellow of the American Mathematical Society
2010 - 2013 UIC University Scholar
Spring 1994 Member, M.S.R.I.
Spring 1989 M.S.R.I. Fellowship
1987 Invited hour address, AMS Annual Meeting, San Antonio, TX
1986 - 1987 Member, Institute for Advanced Study
1986 - 1988 Sloan Foundation Fellowship
1984 - 1985 N.S.F. Post-doctoral Fellowship at M.S.R.I.

RECENT GRANT SUPPORT
2012-2015 NSF DMS-1207720: "Hyperbolic 3-Manifolds." \$375,000
2009-2012 NSF DMS-0906155: "Topology geometry and arithmetic of hyperbolic 3 manifolds." \$276,734.
2006-2008 NSF DMS-0608567: "The topology of hyperbolic 3-manifolds." \$150,864
2005-2006 NSF DMS-0504975: "Hyperbolic geometry and 3-dimensional topology." \$232,502
2006 NSF DMS-0603270 "Journées Peter Shalen - A conference on 3-dimensional topology and its rôle in mathematics." \$24,000
2002-2005 NSF DMS-0204142: "Topology and geometry of 3-dimensional manifolds." \$334,420

EDITORSHIPS Topology Editor, New York Journal of Mathematics, 1997-2013.

Editor, Electronic Research Announcements in Mathematical Sciences, 2012-2014

PUBLICATIONS

- [1] Marc Culler and Nathan Dunfield. Orderability and dehn filling. Preprint 2016, 49 pages, to appear in *Geom. Topol.*
- [2] Marc Culler and Peter B. Shalen. Margulis numbers for Haken manifolds. *Israel J. Math.*, 190:445–475, 2012.
- [3] Marc Culler and Peter B. Shalen. 4-free groups and hyperbolic geometry. *J. Topol.*, 5(1):81–136, 2012.
- [4] Marc Culler and Peter B. Shalen. Singular surfaces, mod 2 homology, and hyperbolic volume, II. *Topology Appl.*, 158(1):118–131, 2011.
- [5] Ian Agol, Marc Culler, and Peter B. Shalen. Singular surfaces, mod 2 homology, and hyperbolic volume, I. *Trans. Amer. Math. Soc.*, 362(7):3463–3498, 2010.
- [6] Marc Culler and Peter B. Shalen. Betti numbers and injectivity radii. *Proc. Amer. Math. Soc.*, 137(11):3919–3922, 2009.
- [7] Marc Culler, Jason DeBlois, and Peter B. Shalen. Incompressible surfaces, hyperbolic volume, Heegaard genus and homology. *Comm. Anal. Geom.*, 17(2):155–184, 2009.
- [8] Marc Culler and Peter B. Shalen. Volume and homology of one-cusped hyperbolic 3-manifolds. *Algebr. Geom. Topol.*, 8(1):343–379, 2008.
- [9] Steve Boyer, Marc Culler, Peter B. Shalen, and Xingru Zhang. Characteristic subsurfaces, character varieties and Dehn fillings. *Geom. Topol.*, 12(1):233–297, 2008.
- [10] Ian Agol, Marc Culler, and Peter B. Shalen. Dehn surgery, homology and hyperbolic volume. *Algebr. Geom. Topol.*, 6:2297–2312, 2006.
- [11] Steve Boyer, Marc Culler, Peter B. Shalen, and Xingru Zhang. Characteristic subsurfaces and Dehn filling. *Trans. Amer. Math. Soc.*, 357(6):2389–2444 (electronic), 2005.
- [12] Marc Culler and Peter B. Shalen. Knots with only two strict essential surfaces. In *Proceedings of the Casson Fest*, volume 7 of *Geom. Topol. Monogr.*, pages 335–430 (electronic). Geom. Topol. Publ., Coventry, 2004.
- [13] Richard D. Canary, Marc Culler, Sa’ar Hersonsky, and Peter B. Shalen. Approximation by maximal cusps in boundaries of deformation spaces of Kleinian groups. *J. Differential Geom.*, 64(1):57–109, 2003.
- [14] Marc Culler and Peter B. Shalen. Boundary slopes of knots. *Comment. Math. Helv.*, 74(4):530–547, 1999.
- [15] Marc Culler, Sa’ar Hersonsky, and Peter B. Shalen. The first Betti number of the smallest closed hyperbolic 3-manifold. *Topology*, 37(4):805–849, 1998.
- [16] Marc Culler and Peter B. Shalen. Volumes of hyperbolic Haken manifolds. II. *Proc. Amer. Math. Soc.*, 125(10):3059–3067, 1997.
- [17] James W. Anderson, Richard D. Canary, Marc Culler, and Peter B. Shalen. Free Kleinian groups and volumes of hyperbolic 3-manifolds. *J. Differential Geom.*, 43(4):738–782, 1996.
- [18] Marc Culler and Karen Vogtmann. A group-theoretic criterion for property FA. *Proc. Amer. Math. Soc.*, 124(3):677–683, 1996.
- [19] Marc Culler and Peter B. Shalen. Volumes of hyperbolic Haken manifolds. I. *Invent. Math.*, 118(2):285–329, 1994.
- [20] D. Cooper, M. Culler, H. Gillet, D. D. Long, and P. B. Shalen. Plane curves associated to character varieties of 3-manifolds. *Invent. Math.*, 118(1):47–84, 1994.

- [21] Marc Culler and Peter B. Shalen. The volume of a hyperbolic 3-manifold with Betti number 2. *Proc. Amer. Math. Soc.*, 120(4):1281–1288, 1994.
- [22] Marc Culler and Peter B. Shalen. Hyperbolic volume and mod p homology. *Comment. Math. Helv.*, 68(3):494–509, 1993.
- [23] Marc Culler and Peter B. Shalen. Paradoxical decompositions, 2-generator Kleinian groups, and volumes of hyperbolic 3-manifolds. *J. Amer. Math. Soc.*, 5(2):231–288, 1992.
- [24] Marc Culler and Karen Vogtmann. The boundary of outer space in rank two. In *Arboreal group theory (Berkeley, CA, 1988)*, volume 19 of *Math. Sci. Res. Inst. Publ.*, pages 189–230. Springer, New York, 1991.
- [25] M. Culler, C. McA. Gordon, J. Luecke, and P. B. Shalen. Correction to: “Dehn surgery on knots” [Ann. of Math. (2) 125 (1987), no. 2, 237–300; MR0881270 (88a:57026)]. *Ann. of Math. (2)*, 127(3):663, 1988.
- [26] Marc Culler and John W. Morgan. Group actions on \mathbf{R} -trees. *Proc. London Math. Soc. (3)*, 55(3):571–604, 1987.
- [27] Marc Culler, C. McA. Gordon, J. Luecke, and Peter B. Shalen. Dehn surgery on knots. *Ann. of Math. (2)*, 125(2):237–300, 1987.
- [28] Marc Culler and Karen Vogtmann. Moduli of graphs and automorphisms of free groups. *Invent. Math.*, 84(1):91–119, 1986.
- [29] Marc Culler. Lifting representations to covering groups. *Adv. in Math.*, 59(1):64–70, 1986.
- [30] Marc Culler, C. McA. Gordon, J. Luecke, and Peter B. Shalen. Dehn surgery on knots. *Bull. Amer. Math. Soc. (N.S.)*, 13(1):43–45, 1985.
- [31] Marc Culler. Finite groups of outer automorphisms of a free group. In *Contributions to group theory*, volume 33 of *Contemp. Math.*, pages 197–207. Amer. Math. Soc., Providence, RI, 1984.
- [32] M. Culler and P. B. Shalen. Bounded, separating, incompressible surfaces in knot manifolds. *Invent. Math.*, 75(3):537–545, 1984.
- [33] Marc Culler and Peter B. Shalen. Varieties of group representations and splittings of 3-manifolds. *Ann. of Math. (2)*, 117(1):109–146, 1983.
- [34] M. Culler, W. Jaco, and H. Rubinstein. Incompressible surfaces in once-punctured torus bundles. *Proc. London Math. Soc. (3)*, 45(3):385–419, 1982.
- [35] Marc Culler. Using surfaces to solve equations in free groups. *Topology*, 20(2):133–145, 1981.
- [36] Marc Culler. Homology equivalent finite groups are isomorphic. *Proc. Amer. Math. Soc.*, 72(1):218–220, 1978.

June 25, 2017