

Nathaniel Bottman

CONTACT INFORMATION	Vivatsgasse 7 Bonn, Germany 53115	<i>email:</i> bottman@mpim-bonn.mpg.de <i>website:</i> http://natebottman.github.io
PROFESSIONAL APPOINTMENTS	Research Group Leader and Advanced Researcher (W2 position), Max Planck Institute for Mathematics , Bonn, Germany, January 2021–. Assistant Professor (postdoctoral position), University of Southern California , Los Angeles, CA, August 2019–December 2020. Member, Institute for Advanced Study , Princeton, NJ, 2016–2019 Postdoctoral Research Fellow, Princeton University , Princeton, NJ, 2016–2019 Instructor, Northeastern University , Boston, MA, 2015–2016	
INTERESTS	Mathematics: symplectic geometry, with connections to combinatorics and algebraic geometry	
GRANTS	National Science Foundation Standard Grant DMS-1906220 , <i>Relating Fukaya Categories Using Combinatorics, Operads, and Nonlinear Elliptic Partial Differential Equations</i> , \$144K, 2019–22.	
EDUCATION	Massachusetts Institute of Technology , Cambridge, MA Ph.D., Mathematics, September 2015, advised by Katrin Wehrheim University of Washington , Seattle, WA B.S., Mathematics, B.A., Slavic Languages and Literatures, June 2010	
HONORS AND AWARDS	National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship, 2016–2019 National Science Foundation Graduate Research Fellowship, 2010–2015 University of Washington Dean’s Medal, 2010 (given to the top senior in the natural sciences)	
PUBLICATIONS (“*” = UNDERGRADUATE COAUTHOR.)	A cellular decomposition of the Fulton–MacPherson operad from symplectic geometry. Nathaniel Bottman. Preprint available at https://arxiv.org/abs/2101.03211 . 18pp. A comparison of group testing architectures for COVID-19 testing. Nathaniel Bottman, Yaim Cooper, Felix Janda. Preprint available at https://arxiv.org/abs/2005.03051 . 19pp. The 2-associahedra are Eulerian. Nathaniel Bottman, Dylan Mavrides*. Submitted; preprint available at https://arxiv.org/abs/1910.09672 . 10pp. A compactification of the space of marked vertical lines in \mathbb{C}. Nathaniel Bottman, Alexei Oblomkov. Submitted; preprint available at https://arxiv.org/abs/1910.02037 . 37pp. A_∞-categories and relative 2-operads. Nathaniel Bottman, Shachar Carmeli. Accepted (2021), <i>Higher Structures</i> . 20pp. Explicit constructions of quilts with seam condition coming from symplectic reduction. Nathaniel Bottman. Accepted (2019), <i>Kyoto Journal of Mathematics</i> . 9pp. Moduli spaces of witch curves topologically realize the 2-associahedra. Nathaniel Bottman. Accepted (2018), <i>Journal of Symplectic Geometry</i> . 21pp. 2-associahedra. Nathaniel Bottman. Accepted (2018), <i>Algebraic & Geometric Topology</i> . 49pp. Pseudoholomorphic quilts with figure eight singularity. Nathaniel Bottman. Accepted (2018), <i>Journal of Symplectic Geometry</i> . 33pp. Gromov compactness for squiggly strip shrinking in pseudoholomorphic quilts. Nathaniel Bottman, Katrin Wehrheim. <i>Selecta Mathematica</i> (2018) 24, pp. 3381–3443.	

Elliptic solutions of the defocusing NLS equation are stable. Nathaniel Bottman, Bernard Deconinck, Michael Nivala. *J. Phys. A* 44 (2011), no. 28, 24 pp.

KdV cnoidal waves are spectrally stable (with Bernard Deconinck). Nathaniel Bottman, Bernard Deconinck. *Discrete Contin. Dyn. Syst.* 25 (2009), no. 4, 1163–1180.

ACTIVITIES
ORGANIZED

Co-organizing (with Mohammed Abouzaid, Catherine Cannizzo, Sheel Ganatra, and Kyler Siegel) the Western Hemisphere Virtual Symplectic Seminar (a weekly event which presents one or two talks per week to an audience of ~ 100).

Co-organized (with Sheel Ganatra) the USC Symplectic Geometry and Floer Theory Reading Group, Fall 2019.

Co-organized the IAS/Princeton Symplectic Geometry Seminar, Fall 2016–Spring 2019.

Co-organized the RTG Workshop on Polyfold Theory towards the Fukaya Category at UC Berkeley in June 2017. With Joel Fish and Katrin Wehrheim, arranged a weeklong workshop where ~ 30 graduate students, postdocs, and professors learned about the new technology of polyfolds. Helped to launch a wiki compendium of polyfolds knowledge, now hosted at <http://polyfolds.org>.

Co-organized a Special Session on Moduli Spaces in Symplectic Geometry at the 2016 Joint Mathematical Meetings in Seattle, WA.

Co-organized the GPRT Seminar at Northeastern during 2015–16.

Co-organized the 2013 MIT-RTG Geometry Workshop in Big Bear Lake, CA. Arranged a weeklong workshop where 30 graduate students and postdocs lectured on mirror symmetry.

Co-organized the 2012 MIT-RTG Geometry Workshop in Watsonville, CA: a weeklong workshop where 35 graduate students and postdocs learned about polyfolds, under Helmut Hofer’s supervision.

INVITED TALKS

Peter Teichner’s Topology Seminar, Max Planck Institute for Mathematics, March 2021.

Geometry Seminar, University of Southern California, November 2020.

“Operad Pop-up” workshop, online event, August 2020.

Workshop entitled “Structural aspects of Fukaya categories,” Harvard University, May 2020. (Cancelled due to COVID-19.)

Geometry Seminar, University of Georgia, Spring 2020. (Postponed due to COVID-19.)

Topology Seminar, Northeastern University, Spring 2020.

Workshop entitled “Recent developments in Lagrangian Floer theory,” Simons Center for Geometry and Physics, March 2020.

Southern California Algebraic Geometry Seminar, UC San Diego, February 2020.

Ezra Getzler’s seminar, Northwestern University, January 2020.

Combinatorics Seminar, University of Southern California, January 2020.

Special Colloquium, University of British Columbia, December 2019.

Special Colloquium, Max Planck Institute for Mathematics, December 2019.

Special Colloquium, University of Southern California, December 2019.

Joint Los Angeles Topology Seminar, UCLA, November 2019.

Algebra and Geometry Seminar, Caltech, October 2019.

Discrete Geometry and Combinatorics Seminar, Cornell University, September 2019.

Valley Geometry Seminar, University of Massachusetts, Amherst, September 2019.

Topology Seminar, University of Indiana, March 2019.

Symplectic Geometry Seminar, Stony Brook University, March 2019.
 Symplectic Geometry, Gauge Theory, and Categorification Seminar, Columbia, February 2019.
 Combinatorics Seminar, University of Washington, February 2019.
 Topology Seminar, UC Berkeley, November 2018.
 AMS Sectional Meeting, Northeastern University, April 2018
 Master Lecture Series Workshop on Dusa McDuff's works, Tsinghua Sanya International Mathematics Forum, December 2017 (could not accept invitation)
 Deformation Theory Seminar, University of Pennsylvania, December 2017
 RTG Workshop on Polyfold Theory towards the Fukaya Category, UC Berkeley, June 2017
 Mirror Symmetry Seminar, Kansas State University, March 2017
 Members Seminar, Institute for Advanced Study, December 2016
 Deformation Theory Seminar, University of Pennsylvania, February 2016
 Quantum Fields and String Seminar, Perimeter Institute, Spring 2016
 Jonathan Weitsman's Seminar, Northeastern University, December 2015
 Mathematics Colloquium, University of Massachusetts, Boston, November 2015
 Summer School on Moduli Problems in Symplectic Geometry, IHES, July 2015
 Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar, April 2015
 Rutgers Geometry, Symmetry, and Physics Seminar, March 2015
 AMS Sectional Meeting, Michigan State University, March 2015
 Northeastern University Analysis and Geometry Seminar, January 2015
 Harvard Gauge Theory Seminar, October 2014
 S. T. Yau's Seminar, Harvard University, October 2014
 Workshop on Moduli Spaces of Pseudo-holomorphic Curves II, Simons Center, June 2014
 Northern California Symplectic Geometry Seminar, Stanford University, March 2014
 University of Texas Geometry Seminar, February 2014

TEACHING

Instructor, Math 114 (foundations of statistics), USC, Fall 2020.
 Instructor, Math 226 (multivariable calculus), USC, Fall 2020.
 Instructor, Math 245 (ODEs for engineers), USC, Spring 2020
 Instructor, Math 226 (multivariable calculus), USC, Fall 2019
 Instructor, Math 5122 (graduate course on manifolds), Northeastern University, Spring 2016
 Instructor, Math 2321 (multivariable calculus for engineers), Northeastern University, Fall 2015
 Recitation instructor, 18.01A/02A (single- and multivariable calculus), MIT, Fall 2013