

# Jeffrey H. Giansiracusa

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BIO	<i>Born:</i> May 25, 1981.	<i>Citizenship:</i> USA and UK
CONTACT INFORMATION	Department of Mathematics Swansea University Singleton Park Swansea SA2 8PP, United Kingdom	<i>Voice:</i> +44 (0)7815 861468 <i>Fax:</i> +44 (0)1792 295843 <i>E-mail:</i> j.h.giansiracusa@gmail.com <i>WWW:</i> <a href="http://math.swansea.ac.uk/staff/jhg/">http://math.swansea.ac.uk/staff/jhg/</a>
RESEARCH INTERESTS	<b>Topology:</b> <i>cobordism theory, Pontrjagin-Thom theory, diffeomorphism groups and mapping class groups in low dimensions, topology of moduli spaces (curves, abelian varieties) and their compactifications, operads, topological field theory, rational homotopy theory.</i> <b>Algebraic geometry:</b> <i>tropical geometry, non-archimedean analytic geometry, the field with one element, moduli spaces, toroidal compactifications, matroids in commutative algebra</i>	
POSITIONS	<b>Swansea University</b> , United Kingdom Associate Professor Senior Lecturer (equiv to asst. prof.) and EPSRC Research Fellow <b>University of Bath</b> , United Kingdom Research Fellow (EPSRC CAF funded) <b>Swansea University</b> , United Kingdom Lecturer (fixed term) <b>Magdalen College, University of Oxford</b> , United Kingdom Fellow by Examination (junior research fellow). <b>Institut des Hautes Études Scientifique</b> , Bures-sur-Yvette William Hodge postdoctoral fellow.	<b>Oct. 2011 – present</b> Mar. 2016 – present Oct. 2011 – Feb. 2016 <b>Oct. 2010 – Sep. 2011</b> <b>Jan. 2010 – Sep. 2010</b> <b>2007 – 2010</b> <b>2006 – 2007</b>
EDUCATION	<b>University of Oxford</b> , United Kingdom <i>Mathematical Institute, and Merton College</i> D.Phil. in Mathematics • Advisor: Ulrike Tillmann • Thesis title: “Diffeomorphism groups and cobordism categories” • Defended April 23, 2007, examined by Graeme Segal and Richard Thomas <b>University of Washington</b> , Seattle, Washington USA B.S. <i>Summa Cum Laude</i> with Distinction in Mathematics (Comprehensive), June, 2003 B.S. <i>Summa Cum Laude</i> with Distinction in Physics, June, 2003	<b>2003 – 2007</b> <b>1999 – 2003</b>
HONORS, AWARDS AND GRANTS	Welsh Crucible collaboration grant, £8900 <i>For project “Guided by the sun: new cross-disciplinary methods for modelling and analysis of tumour growth”</i> Fellow of the Higher Education Academy Welsh Crucible participant <i>Highly competitive program training research leaders in interdisciplinary research, media engagement and policy making</i> EPSRC Career Acceleration Fellowship, £438,000 <i>Project title “Moduli spaces from a homotopy theoretic point of view,” grant EP/I003908/2.</i>	2017 2016 2016 2010 – 2015

LMS Scheme 1 conference grant, £1371 <i>To fund Swansea minischool "Modern Perspectives in Homotopy Theory: infinity categories, infinity operads and homotopy type theory," 10 – 13 April, 2012.</i>	1/2012
HESTEM Practice Transfer Adopters grant, £10,000 <i>With A. Neate and A. Potrykus, to create new mathematical modelling undergraduate course.</i>	11/2011
LMS Scheme 1 conference grant, £5000 <i>To fund the 25th British Topology Meeting in Merton College, Oxford.</i>	2/2010
LMS Scheme 2 grant, £800 <i>Brought Kiyoshi Igusa to the UK to give a series of lectures at Oxford, Sheffield and Leeds.</i>	11/2008
Merton College Prize Scholarship, £500	10/2005 – 10/2006
NSF Graduate Research Fellowship, \$117,000	10/2003 – 10/2006
British Overseas Research Student Award, £21,000	10/2003 – 10/2006
Oxford Clarendon Bursary (declined)	10/2003
U.W. Dean's Medal in the Natural Sciences <i>For the top U.W. graduate in the natural sciences.</i>	June 2003
Twice Outstanding Winner in COMAP Mathematical Contest in Modeling <i>Siam Prize recipient in 2002, MAA Prize recipient in 2003.</i>	2002 and 2003
Barry Goldwater Scholarship, \$7500 <i>U.S. national science and engineering scholarship.</i>	10/2002 – 10/2003
Mary Gates Undergraduate Research Grants, \$7000	1999 and 2001

MEETINGS AND  
EVENTS  
ORGANIZED

Workshop "Tropical mathematics in Swansea"	7–9 July 2014.
Conference "Modern Perspectives in Homotopy Theory: infinity categories, infinity operads and homotopy type theory"	10–13 April 2012
25th British Topology Meeting, Merton College, Oxford	6–8 Sept. 2010
LMS funded Kiyoshi Igusa lecture tour (Sheffield, Oxford, Leeds)	November 2008

EDITORIAL  
POSITIONS

Editorial Advisory Board for the London Math. Soc. journals	Feb. 2016 – present
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SERVICE AND  
COMMITTEES

Director of Research, Department of Mathematics, Swansea	Oct 2016 – present
Swansea Mathematics Year 1 Tutor <i>Advisor to entering cohort of 140 first-year undergraduate mathematics students</i>	Oct 2015 – Sept 2016
Swansea's British Science Festival local organizing task force	Oct 2014 – present
London Mathematical Society Research Policy Committee	Oct 2014 – present
Swansea University Athena SWAN (gender equality) committees: University Self Assessment Team, College of Science Self Assessment Team, University Data Working Group. <i>Various committees tasked with designing and implementing gender equality measures across the College and University, and apply for Athena SWAN certification for our efforts. I personally wrote 1/3 of the College of Science's recent successful Bronze Award application.</i>	Oct 2012 – present

Swansea College of Science Research Committee	Oct 2012 – present
Reviewer for Zentralblatt MATH and MathReviews	
Referee for: EPSRC, Acta, Journal of Topology, Duke, Math. Res. Lett., Algebraic & Geometric Topology, Crelle, Trans. AMS, Documenta, GGD, J. LMS, Compositio, Advances, JEMS	
Organizer of the Swansea Algebra and Topology seminar	2012 – 2014
One of the coordinators of the Swansea Network theory research group	2012 – 2013
MathCymru Outreach Lecturer	2010
Oxford Topology Group webmaster	2005 – 2010
Organizer of Oxford Junior Geometry and Topology seminar	2004 – 2005
COMAP Mathemaical Contest in Modeling team coach.	2003 – 2005
<i>This is an international contest for teams of undergraduates. The Merton College team I organized in 2004 was an Outstanding Winner and received the INFORMS prize.</i>	
Undergraduate admissions interviewer, Merton and Magdalen College, Oxford	2005 – 09

PHD STUDENTS Kobina Jamieson, January 2018 – ongoing  
 Thesis topic: *Tropical modifications in tropical scheme theory*

Noorah Alsorayea, January 2018 – ongoing  
 Thesis topic: *Matroids and tropical Hilbert schemes of points.*

Kayleigh Ward, October 2015 – ongoing  
 Thesis topic: *Tropical schemes and the tropical  $j$ -invariant*

Ramses Fernandez-Valencia, 2012 – 2015  
 Thesis title: *Topics in 2-dimensional topological conformal field theories.*  
 Now in consultancy in Barcelona.

I served on the PhD thesis examination committees for

- Deniz Naset, Swansea, 2012
- Federico Cantero, Barcelona, 2013
- Daniel Egas Santander, Copenhagen, 2014
- Simon Fairfax, Swansea, 2014
- Jaiung Jun, Johns Hopkins, 2015
- Hongyun Yon, Oxford, 2017
- Dean Barber, Sheffield, 2017

I have advised 21 undergraduate final year dissertation projects. Topics have included: *mathematics of music, knot theory, quantum mechanics, quantum computing, phylogenetics, matroids, Lindenmayer systems, mathematical billiards, relativity, Google's PageRank algorithm, genetic algorithms, generating functions.*

INVITED  
CONFERENCE  
TALKS

Matroids over hyperfields, Fribourg, Switzerland, August 2017  
AIM Workshop, Foundations of tropical schemes, May 2017  
LMS regional meeting, Bath, December 2016  
Oberwolfach workshop on surface bundles, Oberwolfach, Germany, December 2016  
Tropical and Nonarchimedean Analytic Geometry of Moduli Spaces, Oaxaca, May 2016  
Tropical Geometry in the Tropics, IMPA, Rio de Janeiro, June 2015  
93rd Transpennine Topology Triangle meeting, Leicester, November 2014  
Workshop on Algebraic Foundations for Tropical Geometry, Yale, May 2014 (3 hours)  
Higher Structures in Topology and Number Theory, Oxford, April 2013  
GDR topologie algébrique et applications, Angers, October 2013  
Operads and Deformation Theory, INI Cambridge, April 2013  
Operads, configuration spaces and moduli spaces Conference, Mediteranean Institute of Mathematical Sciences, Tunis, June 2012 (2 hours)  
Noncommutative Geometry Conference, Cardiff University, April 2012  
British Maths Colloquium 2010, Leicester University, April 2010  
24th British Topology Meeting, Leicester University, September 2009  
Triangulated Categories conference, Swansea University, December 2008  
Foliations conference, University of Tokyo, Japan, October 2008  
CRM Conference on differentiable stacks and homotopy theory, Barcelona, April 2008  
Moduli spaces and operads workshop, Copenhagen, September 2007 (2 hours)  
Lille summer school, June 2007 (3 hours)  
Louvain-la-Neuve topology conference, March 2007  
K-theory Day, Southampton, June 2006  
University of Sheffield, 51st Meeting of the Transpennine Topology Triangle, October 2005  
Annual Meeting of Mathematical Association of America: *Mathfest*, Boulder, CO, August 2003. (*Special session for the MCM winners*)  
Society for Industrial and Applied Mathematics 50th Anniversary Meeting, Philadelphia, PA, July 2002 (*Special session for the MCM winners*)

PUBLICATIONS

22. J. Giansiracusa, J. Jun and O. Lorscheid, *On the relation between fuzzy rings and hyperrings*. to appear in *Beitrage*, arXiv:1607.01973.
21. J. Giansiracusa and N. Giansiracusa, *A Grassmann algebra for matroids*. to appear in *Manuscripta*, arXiv:1510.04584.
20. J. Giansiracusa and N. Giansiracusa, *The universal tropicalization and the Berkovich analytification*. Submitted, arXiv:1410.4348.
19. R. Fernandez-Valencia and J. Giansiracusa, *On the Hochschild homology of involutive algebras*. To appear in the *Glasgow Mathematical Journal*, arXiv:1505.02219.
18. J. Giansiracusa and N. Giansiracusa, *Equations of tropical varieties*. *Duke Math J* 165 (2016), no. 18, 33793433, arXiv:1308.0042.

17. J. Giansiracusa, *Moduli spaces and modular operads*. *Morfismos* 17 (2013), no. 2, 101–125.
16. T. Church, M. Crossley and J. Giansiracusa, *Invariance properties of Miller-Morita-Mumford characteristic numbers*. *The Quarterly Journal of Mathematics* 64 (2013) 729–746.  
arXiv:1112.4961.
15. J. Giansiracusa, *The framed little 2-discs operad and diffeomorphisms of handlebodies*. *J Topology* 4 (2011), no. 4, 919–941. arXiv:1008.3272.
14. J. Giansiracusa and U. Tillmann, *Vanishing of universal characteristic classes for handlebody groups and boundary bundles*. *J Homotopy and Related Structures* 6 (2011), 103–112.  
arXiv:0910.5367.
13. J. Giansiracusa and P. Salvatore, *Cyclic formality of the framed 2-discs operad and genus zero stable curves*. *Tran. AMS* 364 (2012), no. 11, 5881–5911. arXiv:0911.4430.
12. J. Giansiracusa and P. Salvatore, *Formality of the framed little 2-discs operad and semidirect products*. “Homotopy theory of function spaces and related topics”, 115–121, *Contemp. Math.*, 519, Amer. Math. Soc., Providence, RI, (2010). arXiv:0911.4428.
11. J. Ebert and J. Giansiracusa, *Pontrjagin-Thom maps and the homology of the moduli stack of stable curves*. *Math. Ann.* 349 (2011), no. 3, 543–575. arXiv:0712.0702.
10. J. Holland, J. Giansiracusa, S. Bell, L.-L. Wong and J. Dilworth, *In vitro kinetic studies on the mechanism of oxygen-dependent cellular uptake of copper radiopharmaceuticals*. *Phys. Med. Biol.* 54 (2009) 2103–2119.
9. J. Ebert and J. Giansiracusa, *On the homotopy type of the Deligne-Mumford compactification*. *Algebraic & Geometric Topology* 8 (2008) 2049–2062. arXiv:0807.2576.
8. J. Giansiracusa, *The diffeomorphism group of a  $K3$  surface and Nielsen realization*. *J. London Math. Soc.* 79 (2009) 701–718. arXiv:0705.4545.
7. J. Giansiracusa, *The stable mapping class group of simply-connected 4-manifolds*. *J. reine angew. Math.* 617 (2008) 215–235. arXiv:math/0510599.
6. A. Alldridge, J. Giansiracusa, *Contravariant functoriality for twisted  $K$ -theory of stacks*. *Oberwolfach Reports* no. 46 (2006) 2796–2800.
5. J. Giansiracusa and D. Maulik, *Topology and Geometry of the Moduli space of curves: a web resource for researchers*. (2004).  
<http://www.aimath.org/WWN/modspacecurves/>
4. E. Esser, S.F. Pai, J. Giansiracusa. *Cardboard Comfortable when it comes to Crashing*. *UMAP Journal* 24.3 (2003) 281–298.
3. B.A. Brown, R. Clement, H. Schatz, J. Giansiracusa, W.A. Richter, M. Hjorth-Jensen, K.-L. Kratz, B. Pfeiffer, and W.B. Walters. *Nuclear Structure Theory for the Astrophysical  $rp$ -process and  $r$ -process*. *Nucl. Phys.* A719 (2003) 177c–184.
2. G.F. Bertsch, J. Giansiracusa, K. Yabana. *Application of time-dependent density-functional theory to electron-ion coupling in ethylene*. *Israel Journal of Chemistry* 42 (2002) 151–156.  
arXiv:physics/0210043.
1. R. Card, E. Esser, J. Giansiracusa. *A Foul Weather Fountain*. *UMAP Journal* 23.3 (2002) 251–266.