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Curriculum Vitae

(this version LaTeX'ed April 3, 2015)

Employment:

2007–	Professor of Mathematics, MIT;
	in 2014–19: Norman Levinson Professor
2003–07	Professor of Mathematics, University of Chicago
2002–03	Professor of Mathematics, Imperial College London
1999–2002	CNRS Research Fellow (chargé de recherche),
	Ecole Polytechnique, Paris;
	in 2000-1 additionally: lecturer (maître de conférences)

Visiting positions:

2016–17	Distinguished Visiting Professor, Institute for Advanced Study
2014–15	Fellow of the Radcliffe Institute for Advanced Study
Spring 2011	Visiting Faculty Member, Simons Center for Geometry and Physics
2006–07	Visiting Professor, MIT
Spring 2003	Visiting Professor, ETH Zürich
2001–02	Member, Institute for Advanced Study
1998–99	Visitor, Max Planck Institut Bonn
1997–98	Member, Institute for Advanced Study

Education:

1994–97	Graduate student, Oxford University
	(D. Phil. obtained in 1998, advisor: S. Donaldson)
1990–94	Undergraduate, Heidelberg University;
	(Diploma in Mathematics obtained in 1994, advisor: A. Dold)

Distinctions:

- Member of the American Academy of Arts and Sciences (2014–)
- Fellow of the American Mathematical Society (2012–)
- Veblen Prize of the American Mathematical Society (2010)
- Junior Faculty Mentoring Award (for graduate student mentoring), University of Chicago (2006)
- Invited speaker, Differential Geometry section, International Congress of Mathematics, Beijing (2002)
- European Mathematical Society Prize, Awarded at the European Congress of Mathematics, Barcelona (2000)

Named lectures/Distinguished lectures:

- Jankowski Memorial Lecture, Gdansk (2015)
- Plenary Lecture, Clay Research Conference, Oxford (2014)
- Invited (Plenary) Lecture, AMS/MAA Joint Annual Meeting, Baltimore (2014)
- Adem Lecture, Mexico City (2012)
- Mordell Lecture, Cambridge University (2012)
- Distinguished Lecture Series, UCLA (2012)
- Marston Morse lectures, IAS, Princeton (2010)
- Evans Lecture, Berkeley (2010)
- William Spencer lecture, Kansas State U (2007)
- Walter Feit Memorial Lecture, Yale (2006)

Grants awarded:

As sole Principal Investigator:

2012–17	Simons Foundation	*Simons Investigator Fellowship*
2010–15	NSF	*Cohomological methods in symplectic topology*
2004–07	NSF	*Fukaya categories and applications*

As co-PI or part of a group application:

2013–16	NSF	*FRG: Collaborative Research: Wall-crossings in Geometry and Physics*
2010–15	NSF	*EMSW-21-RTG: Geometry and Topology*
2007–10	NSF	*FRG Collaborative Research: Homological Mirror Symmetry and its applications*

PhD students:

Name	Graduation	School	Subsequent position
Joseph Jones	2006	Chicago	New York University
Masuo Yanagisawa	2007	Chicago	financial industry
Mohammed Abouzaid	2007	Chicago	Clay Research Fellowship
Gabriel Kerr	2007	Chicago	Northwestern University
Emma Smith	2009	Chicago	Wentworth Inst. Tech.
Alexander Ritter	2009	MIT	Cambridge University
Nick Sheridan	2012	MIT	Princeton/IAS
David Jackson-Hanen	2014	MIT	unknown
Ailsa Keating	2014	MIT	Columbia University
Netanel Blaier		MIT	
Umut Varolgunes		MIT	

Postdocs mentored:

Name	Period	School	Subsequent position
Kevin Costello	2006–07	Chicago	Northwestern
Mark McLean	2009–12	MIT	IAS/Aberdeen
Vivek Shende	2011–13	MIT	Berkeley
Jason McGibbon	2011–14	MIT	Univ. of Mass. Amherst
Emmy Murphy	2012–15	MIT	MIT
Michael McBreen	2013–14, 15–17	MIT	
Sobhan Seyfaddini	2014-16	MIT	

Teaching: (graduate courses are marked with a *)

MIT (2006–)	Calculus
	Real analysis
	Riemann surfaces*
	Project Laboratory in Mathematics
	Symplectic homology*
	Differential geometry
	Geometry of manifolds*
	Gromov-Witten theory*
	Riemann surfaces*
	Categorical dynamics and symplectic topology*
	Geometry of manifolds*
University of Chicago (2003–06)	Honors Calculus
	Differential geometry*
	Fukaya categories*
	Symplectic geometry of algebraic varieties*
Imperial College (2002–03)	Complex analysis II
	Introduction to quantization*
Ecole Polytechnique (2000–01)	Calcul différentiel et intégral

Selected undergraduate research projects: (* means leading to publication)

Name	Year	School	Topic
Andrew Geng	2009–10	MIT	Knotted symplectic surfaces*
Alejandro Ginory	2011	Florida Intl. Univ.	Quantitative aspects of Hurwitz' theorem
Umut Varolgünes	2012	MIT	Homological mirror symmetry for singularities

Selected departmental service:

2012–14	co-chair of the graduate program
2014–15	chair of the Moore (postdoc) hiring committee

Activities as conference and program organizer:

2017	(with D. McDuff, D. Salamon and R. Thomas) Symplectic geometry, Newton Institute
2016–17	Special Year on Homological mirror symmetry, IAS
2015	Fukaya categories of Lefschetz fibration, MIT
2014	Current developments in Mathematics, Harvard
2011	Equivariant quantum cohomology and mirror symmetry, Simons Center
2011	(with D. Auroux and L. Katzarkov) Mirror symmetry, Miami
2010	(with D. Auroux and L. Katzarkov) Mirror symmetry, MIT
2009	(with M. Abouzaid, K. Fukaya, E. Ionel) Algebraic structures in SFT, MSRI
2009	(with M. Abouzaid, K. Fukaya, E. Ionel) Cyclic homology and symplectic topology, AIM
2009–10	(with J. Etnyre, Ya. Eliashberg, E. Ionel, D. McDuff) Special Year in symplectic and contact geometry, MSRI
2009	(with D. Auroux and L. Katzarkov) Mirror symmetry, MIT
2009	(with S. Ganatra and J. Francis) Talbot workshop, South Carolina
2009	(with D. Auroux and L. Katzarkov) Mirror symmetry, Miami
2008	(with D. Auroux and L. Katzarkov) Mirror symmetry, MIT
2008	(with D. Auroux and L. Katzarkov) Mirror symmetry, Miami
2005	(with B. Leeb and G. Tian) Global differential geometry, Oberwolfach
2002	(with K. Fukaya) Workshop on A_∞-structures and mirror symmetry, Oberwolfach
2000	(with D. Auroux and C. Viterbo) Workshop on symplectic four-manifolds, Paris

Editorial activities:

2014–	Editorial Board Member, J. of the European Math. Soc.
2007–	(with P. Etingof and D. Kazhdan) Editor-in-Chief, Selecta Mathematica
2006–13	Associate editor, Journal of Symplectic Geometry
2008–12	Associate editor, Duke Mathematics Journal
2004–08	Associate editor, Geometriae Dedicata
2006–08	Editorial board member, ERA of the Amer. Math. Soc.

Committee activities (outside the department):

2014–15	Hiring Committee for Lowndean and Herchel-Smith Chairs (University of Cambridge)
2013–15	AMS Centennial Prize committee
2012–	Scientific Advisory Committee, Simons Center for Geometry and Physics

Books and book-length papers:

[3] Homological mirror symmetry for the quartic surface. *Memoirs of the Amer. Math. Soc.*, vol. 1116, 2015 (in press).
[2] Abstract analogues of flux as symplectic invariants. *Mémoires de la Soc. Math. France*, vol. 137, 2014.
[1] Fukaya categories and Picard-Lefschetz theory. *ETH Lecture Notes Series* vol. 8, European Math. Soc., 2008.

Papers:

[35] The equivariant pair-of-pants product in fixed point Floer cohomology. *Geom. Funct. Anal.*, to appear.
[34] Exotic iterated Dehn twists. *Alg. Geom. Top.* 14 (2014), 3305–3324.
[33] Disjoinable Lagrangian spheres and dilations. *Invent. Math.* 197 (2014), 299–359.
[32] Lagrangian homology spheres in (A_m) Milnor fibres via $\mathbb{C}^*$-equivariant A_∞-modules. *Geom. Topol.* 16 (2012), 2343–2389.
[31] (with Jake Solomon) Symplectic cohomology and q-intersection numbers. *Geom. Funct. Anal.* 22 (2012), 443–477.
[30] Fukaya A_∞-structures associated to Lefschetz fibrations, I. *J. Symplectic Geom.* 10 (2012), 325–388.
[29] Simple examples of distinct Liouville type symplectic structures. *J. Topol. Anal.* 3 (2011), 1–5.
[28] Some speculations on Fukaya categories and pair-of-pants decompositions. In: *Surveys in Diff. Geometry*, vol. XVII, Intl. Press, 2012, p. 411–425.
[27] (with Ivan Smith) Localization for involutions in Floer cohomology. *Geom. Funct. Anal.* 20 (2010), 1464–1501.
[26] (with Maksim Maydanskiy) Lefschetz fibrations and exotic symplectic structures on cotangent bundles of spheres. *J. Topology* 3 (2010), 157–180. See also: Corrigendum, *J. Topology*, to appear.
[25] Homological mirror symmetry for the genus two curve. *J. Algebraic Geom.* 20 (2011), 727–769.
[24] (with Mohammed Abouzaid) An open string analogue of Viterbo functoriality. *Geometry and Topology* 14 (2010), 627–718.
[23] Suspending Lefschetz fibrations, with an application to local mirror symmetry. *Commun. Math. Phys.* 297 (2010), 515–528.
[22] (with Kenji Fukaya and Ivan Smith) The symplectic geometry of cotangent bundles from a categorical viewpoint. In: *Homological Mirror Symme-*

try: New Developments and Perspectives, Springer Lect. Notes in Physics vol. 757, 2008, p. 1–26.
[21] A_∞-subalgebras and natural transformations. *Homotopy Homology Appl.* 10 (2008), p. 83–114.
[20] (with Kenji Fukaya and Ivan Smith) Exact Lagrangian submanifolds in simply-connected cotangent bundles. *Invent. Math.* 172 (2008), p. 1–27.
[19] A biased view of symplectic cohomology. In: *Current Developments in Mathematics 2006*. International Press, 2008, p. 211–253.
[18] Symplectic homology as Hochschild homology. In: *Algebraic Geometry: Seattle 2005*. Amer. Math. Soc., 2008, part 1, p. 415–434.
[17] (with Ivan Smith) A link invariant from the symplectic geometry of nilpotent slices. *Duke Math. J.* 134 (2006), p. 453–514.
[16] (with Ivan Smith) The symplectic topology of Ramanujam's surface. *Comment. Math. Helv.* 80 (2005), p. 859–881.
[15] Exact Lagrangian submanifolds in T^*S^n and the graded Kronecker quiver. In: *Different faces of geometry*, Kluwer, 2004, p. 349–364.
[14] Lectures on four-dimensional Dehn twists. In: *Symplectic four-manifolds and algebraic surfaces, Cetraro (2004),* LNM vol. 1938, Springer, 2008, p. 231–268.
[13] Fukaya categories and deformations. In: *Proceedings of the ICM (Beijing)*, Higher Ed. Press, 2002, p. 351–360.
[12] A long exact sequence for symplectic Floer cohomology. *Topology* 42 (2003), p. 1003–1063.
[11] Braids and symplectic four-manifolds with abelian fundamental group. *Turkish J. Math.* 26 (2002), p. 93–100.
[10] Symplectic Floer homology and the mapping class group. *Pacific Math. J.* 206 (2002), p. 219–229.
[9] More about vanishing cycles and mutation. In: *Symplectic Geometry and Mirror Symmetry*, World Scientific, 2001, p. 429–465.
[8] Vanishing cycles and mutation. In: *European Congress of Mathematics (Barcelona)*, Birkhäuser, 2002, p. 65–85.
[7] (with Mikhail Khovanov) Quivers, Floer cohomology, and braid group actions. *J. Amer. Math. Soc.* 15 (2002), p. 203–271.
[6] (with Richard Thomas) Braid group actions on derived categories of coherent sheaves. *Duke Math. J.* 108 (2001), p. 37–108.
[5] Graded Lagrangian submanifolds. *Bull. Soc. Math. France* 128 (2000), p. 103–146.
[4] Lagrangian two-spheres can be symplectically knotted. *J. Differential Geom.* 52 (1999), p. 145–171.
[3] On the symplectic automorphism groups of $\mathbb{C}P^m \times \mathbb{C}P^n$. In: *Northern*

California Symplectic Geometry Seminar, Amer. Math. Society, 1999, p. 237–250.
[2] π_1 of symplectic automorphism groups and invertibles in quantum homology rings. *Geom. Funct. Anal.* 7 (1997), p. 1046–1095.
[1] The symplectic Floer homology of a Dehn twist. *Math. Research Lett.* 3 (1996), p. 829–834.

Submitted for publication (mostly but not always available on the arXiv):

[3] Fukaya A_∞-structures associated to Lefschetz fibrations, II (2014).
[2] Picard-Lefschetz theory and dilating $\mathbb{C}^*$-actions (2014).
[1] (with Mohammed Abouzaid) Altering symplectic manifolds by homologous recombination (2010).

Unpublished (available on the arXiv or the author's homepage):

[2] Symplectic automorphisms of T^*S^2 (preprint, 1998; this has been subsumed into the paper [14]).
[1] Floer homology and the symplectic isotopy problem (DPhil thesis, 1997; most of this has been subsumed into the paper [14]).