

Curriculum Vitae

Aleksey Zinger

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- Research Interests** Geometric properties of Gromov-Witten invariants in algebraic geometry and symplectic topology via analytic and topological methods; connections with enumerative geometry and string theory
- Employment** SUNY Stony Brook (09/05-Present)
Assistant Professor, Department of Mathematics
- Stanford University (09/02-08/05)
NSF Postdoc/Instructor, Department of Mathematics
- Education** Massachusetts Institute of Technology (1997-2002)
Ph.D. in Mathematics, June 2002
Thesis Title: *Enumerative Algebraic Geometry via Techniques of Symplectic Topology and Analysis of Local Obstructions*
Thesis Adviser: Tomasz Mrowka
- Massachusetts Institute of Technology (1993-1997)
B.S. in Mathematics with minors in Physics and Economics, June 1997
- Grants, Honors, Memberships** Sloan Research Fellowship, 9/06-9/10
NSF Grant, 7/06-7/09
NSF PostDoctoral Research Fellowship, 9/02-8/05
Clay Math Institute Liftoff Program, Summer 2002
Research Assistantship under Tomasz Mrowka, 2001-2002
NSF Graduate Research Fellowship, 1998-2001
John A. Bucsela Prize, MIT Department of Mathematics, May 1997
NSF REU at Tulane University, Summer 1996
NSF REU at Washington University in Saint-Louis, Summer 1995
Member of the AMS, 1997-Present
Member of the MAA, 1996-1997

Teaching SUNY Stony Brook Department of Mathematics
Course Instructor for MAT401 (Intro to Enumerative Geometry), Fall 08
 MAT545 (Complex Geometry), Fall 08
 MAT614 (Enumerative Geometry), Fall 07
 MAT566 (Differential Topology), Fall 06
 MAT531 (Differential Geometry), Spring 06
 MAT131 (Calculus I), Fall 06
 MAT530 (General Topology), Fall 06
 Stanford Department of Mathematics, Winter and Autumn 2004
Course Instructor for Math53 (Ordinary Differential Equations)
 MIT Department of Mathematics
Recitation Instructor for 18.02 (Multivariable Calculus), Fall 00
Graduate Tutor for introductory courses, Fall 97 and Spring 98
Undergraduate Tutor for upper-level courses, Fall 96 and Spring 97
 introductory courses, Fall 95 and Spring 96
Grader for 18.02 (Multivariable Calculus), Fall 94
 MIT Experimental Studies Group, Fall 97
Course Tutor for 18.02 (Multivariable Calculus)
 Johns Hopkins Center for Talented Youth Program, Summer 97
Teaching Assistant for high-school geometry

Student Stony Brook Department of Mathematics
Advising, Thesis Advisee: Ritwik Mukherjee (enumerative geometry), December 06-Present
etc. Minor Advisees: Canor Koca (Morse theory), April 07-February 08
 Christopher Bay (spectral sequences), December 06-May 07
 Independent Study: Alexandra Popa (characteristic classes), Spring-Summer 2008
 Thesis Exam Committee: Yakov Savelyev (symplectic topology), June 08
 Yusuf Mustopa (algebraic geometry), April 08
 Emiko Dupont (symplectic topology), July 07
 Zhigang Han (symplectic topology), July 06
 Oral Exam Committee: Gabriel Drummond-Cole (algebraic topology), May 06
 Grader of Comprehensive Written Examinations: January 06, August 07
 Advising at Incoming Student Orientations: Summer 06

Service

Conferences and Seminars co-organized:

Mathematics Colloquium, Fall 07-present

New York Area Symplectic Seminar, Fall 05-present

RTG Workshop on Algebraic and Symplectic Geometry of Uniruled and Rationally Connected Manifolds, Stony Brook, March 1-2, 2008

DusaFest (conference in symplectic topology in honor of Dusa McDuff's 60th birthday), Stony Brook, October 12-15, 2006

Mini-Workshop at DusaFest (short presentations by young researchers), Stony Brook, October 13, 2006

AMS Special Session on New Developments in Symplectic Topology, San Antonio, January 14-15, 2006

WAGS (Western Algebraic Geometry Seminar), Stanford, April 19-20, 2003

Library Committee Member, Fall 2006-present

Referee of papers for 7 different journals

Publications and Preprints

- A. Zinger, *A comparison theorem for Gromov-Witten invariants in the symplectic category*, math/0807.0805
- R. Pandharipande and A. Zinger, *Enumerative geometry of Calabi-Yau 5-folds*, math/0802.1640, submitted
- D. Zagier and A. Zinger, *Some properties of hypergeometric series associated with mirror symmetry*, math/0710.0889, to appear in *Modular Forms and String Duality*, The Fields Institute Communications, Volume 54
- A. Zinger, *Standard vs. reduced genus-one Gromov-Witten invariants*, *Geom.& Top.* 12 (2008), no. 2, 1203-1241
- A. Zinger, *Genus-zero two-point hyperplane integrals in the Gromov-Witten theory* math/0705.2725, submitted
- A. Zinger, *The reduced genus-one Gromov-Witten invariants of Calabi-Yau hypersurfaces*, math/0705.2397, to appear in *JAMS*
- A. Zinger, *Pseudocycles and integral homology*, *Trans. AMS* 360 (2008), 2741-2765
- A. Zinger, *Intersections of tautological classes on blowups of moduli spaces of genus-one curves*, *Mich. Math.* 55 (2007), no. 3, pp 535-560
- R. Vakil and A. Zinger, *A desingularization of the main component of the moduli space of genus-one stable maps into \mathbb{P}^n* , *Geom.&Top* 12 (2008), 1-95
- R. Vakil and A. Zinger, *A natural smooth compactification of the space of elliptic curves in projective space*, *ERA AMS* 13 (2007), 53-59
- J. Li and A. Zinger, *On the genus-one Gromov-Witten invariants of complete intersections*, math/0507104, submitted
- A. Zinger, *Reduced genus-one Gromov-Witten invariants*, math/0507103, submitted
- J. Li and A. Zinger, *On Gromov-Witten invariants of a quintic threefold and a rigidity conjecture*, *Pacific J. Math* 233 (2007), no. 2, 417-480

- A. Zinger, *On the structure of certain natural cones over moduli spaces of genus-one holomorphic maps*, Adv. Math. 214 (2007), no. 2, 878–933
- A. Zinger, *A sharp compactness theorem for genus-one pseudo-holomorphic maps* math/0406103, submitted
- A. Zinger, *Counting rational curves of arbitrary shape in projective spaces*, Geom.& Top. 9 (2005), 571-697
- A. Zinger, *Enumeration of one-nodal rational curves in projective spaces*, Topology 43 (2004), no. 4, pp 793-829
- A. Zinger, *Enumeration of genus-three plane curves with a fixed complex structure* J. Algebraic Geom. 14 (2005), no. 1, 35-81
- A. Zinger, *Enumeration of genus-two curves with a fixed complex structure in \mathbb{P}^2 and \mathbb{P}^3* , J. Diff. Geom. 65 (2003), no. 3, 341-467
- A. Zinger, *Enumerative vs. symplectic invariants and obstruction bundles*, J. Sympl. Geom. 2 (2004), no. 4, 445–543
- A. Zinger, *Completion of Katz-Qin-Ruan’s enumeration of genus-two plane curves* J. Algebraic Geom. 13 (2004), no. 3, 547-561
- M. Kalka, E. Mann, D. Yang, and A. Zinger, *The exponential decay rate of the lower bound for the first eigenvalue of compact manifolds*, Inter. J. Math. 8 (1997), no. 3, 345-355

- Expository Notes** A. Zinger, *Notes on mirror symmetry*, in preparation
- A. Zinger, *Basic estimates of riemannian geometry used in gluing pseudo-holomorphic maps*
- A. Zinger, *Counting plane rational curves: old and new approaches*, math/0507105

- References** Jun Li, Department of Mathematics, Stanford
Tomasz Mrowka, Department of Mathematics, MIT
Rahul Pandharipande, Department of Mathematics, Princeton
Gang Tian, Department of Mathematics, Princeton
Ralph Cohen, Department of Mathematics, Stanford (teaching)