

September 4, 2011

DAN ABRAMOVICH

- **Institutional address:** Department of Mathematics, Brown University, 151 Thayer Street, Brown University Box 1917, Providence, RI 02912. Tel: (401) 863-7968. E-mail: abrmovic@math.brown.edu WWW: <http://math.brown.edu/~abrmovic>

- **Education:**

Harvard University: Ph.D 1991 in algebraic Geometry. Advisor: Joe Harris.

Tel Aviv University: B.Sc. *summa cum laude* 1987.

- **Research interests:** Algebraic and Arithmetic Geometry.

- **Regular faculty positions:**

Brown University: Professor, July 2003 -present.

Boston University: Associate Professor 1999 - 2003, Assistant Professor 1994-9.

Massachusetts Institute of Technology: C. L. E. Moore instructor, 1991 - 1994.

- **Visiting positions:**

Mathematical Sciences Research Institute: Research Professor, Spring 2009.

Brown University: Visiting Distinguished Professor, spring 2003.

Hebrew University, Jerusalem: Forschhimer / Landau Center Visiting Fellow, February-July 2002.

Massachusetts Institute of Technology: Visiting Professor, September-December 2001.

Max Planck Institut für Mathematik, Bonn: Visitor, April-June 1999.

Centre Emile Borel: Visiting Professor, February 1999.

Institut des Hautes Etudes Scientifiques: Visiting Professor, January-March 1999.

Mathematical Sciences Research Institute: Visiting Member, May-June 1998.

Université Paris VI: Visiting Professor, June 1994.

Mathematical Sciences Research Institute: Postdoctoral fellow, spring 1993.

- **Fellowships and funding:**

Alfred P. Sloan Doctoral Dissertation Fellowship, academic year 1990-1991.

Alfred P. Sloan Research Fellowship 1996 - 1998.

Lady Davis Forschhimer fellow, 2002.

GAANN grants co-PI, 1998-2002; 2009-present

NSF research grants 1992-1994, 1995-present.

NSF, CMI conference grants co-PI, Summer 2005; Summer 2008.

- **PhD student advising:**

Patricia Pacelli,	B.U.	PhD 1996.	Jian-Hua Wang,	M.I.T.	PhD 1997.
Kalle Karu,	B.U.	PhD 1999.	Gabriele La Nave,	Brandeis	PhD 2000.
Jiun-Cheng Chen,	Harvard	PhD 2003.	James Spencer,	B.U.	PhD 2004.
Jonathan Wise	Brown	PhD 2008	Henning Ulfarsson	Brown	PhD 2009
Qile Chen	Brown	PhD 2011	Noah Giansiracusa	Brown	PhD 2011
Steffen Marcus	Brown	PhD 2011	Samouil Molcho	Brown	Current
Evangelos Routis	Brown	Current			

- **NSF post-doctoral fellows sponsored:** Max Lieblich, 2004-2005; W. Danny Gillam, 2008-2011.

- **Service**

Department level:

BU mathematics Director of graduate studies, 1997-1998.
 BU mathematics GAANN grants senior personnel, 1998-2002.
 BU Algebra Seminar Coorganizer, 1997-2002
 Brown seminars coorganizer 2003-present.
 Brown mathematics Director of Graduate studies, 2007-present.
 Brown GAANN steering committee.
 MSRI Seminars Committee, spring 2009
 MSRI Logarithmic Geometry Seminar co-organizer

To the profession:

Co-organizer / scientific committees:

- Toroidal geometry and resolution of singularities, BIRS, December 2004.
- AMS Summer Institute in Algebraic Geometry, Seattle July 24-August 12, 2005.
- AMS Special Session, Storrs, CT, October 28-29, 2006
- Aspects of Moduli Theory, de Giorgi Center, Pisa, June 2008
- *Moduli spaces*, Oberwolfach, January 2010.
- Algebraic Geometry New England Series, 2010-present
- MRC program ‘Birational Geometry and Moduli’, Snowbird, June 2010
- Resolution of Singularities, Valladolid, Spain, March 2010
- A celebration of classical algebraic geometry, August 2011
- Logarithmic Geometry and Moduli, CMI, August 2011.

AMS Committee on Committees, 2003 and 2004.

NSF, NSA, DFG review panels.

Editorial boards:

International Mathematics Research Notices, 1999-2004.
 Transactions and Memoirs of the AMS, 2003-present.
 Algebraic Geometry – Seattle 2005, PSPUM 80.

Referee/reviewer for numerous papers, grant applications and promotion dossiers.

To the community:

Alef-Bet Child Care board member & Secretary, 2002-2004.

- **Lectures:**

- **Invited lecture series:**

1. **Poincaré Lecture Series**, The Fields Institute for Research in Mathematical Sciences, Toronto.
Title: Resolution of Singularities and Semistable Reduction in Characteristic 0. **Dates:** February 11 and 12, 1997
2. **Working Week on Resolution of Singularities**, Obergurgl, Tirol, Austria.
Title: Alterations and Resolution of Singularities. **Dates:** September 7-14, 1997
3. **Trimester on Diophantine Equations** at Centre Émile Borel, Paris.
Title: The conjectures of Lang and Vojta. **Dates:** February 9-25, 1999.
4. **Summer School on Intersection Theory and Moduli**, International Center for Theoretical Physics, Trieste, Italy.
Title: Orbifold Cohomology and Quantum Cohomology of Orbifolds. **Dates:** September 16-20, 2002

5. **Enumerative invariants in algebraic geometry and string theory** (CIME), Cetraro, Italy.
Title: Gromov-Witten invariants for orbifolds **Dates:** June 6 - 11, 2005
6. **Clay summer school in Arithmetic Geometry**, Göttingen, Germany.
Title: Birational Geometry for Number Theorists **Dates:** July 31-August 4, 2006
7. **Working week in algebraic geometry**, Obergurgl, Tirol, Austria.
Title: The weak factorization theorem **Dates:** October 21-26, 2007

– **Recent Conference and Workshop Talks**

- * Classical Algebraic Geometry, Oberwolfach, Germany, Summer 2006. *Preconceptions and misconceptions on relative stable maps.*
- * Higher dimensional algebraic Geometry, Echigo Yuzawa, Japan, December 2006. *Remarks on relative stable maps.*
- * CMI workshop “Geometry and Physics of the Landau-Ginzburg Model”, January 12 - 16, 2009, *On Jun Li’s proof of the degeneration formula.*
- * MSRI Algebraic Geometry closing lectures: “Stable varieties with a twist”, May 2009.
- * Algebraic Geometry and Arithmetic, Essen: “Stable varieties with a twist”, February 2010.
- * Great Lakes Geometry, Columbus, OH: “Logarithmic Gromov–Witten theory”, March 2011.
- * Texas Algebraic Geometry Symposium, Houston, TX: “Logarithmic Gromov–Witten theory”, April 22-24, 2011.
- * Moduli Spaces and Moduli Stacks, NY: “Logarithmic Gromov–Witten theory”, May 23-17, 2011.
- * A Celebration of Algebraic geometry, Cambridge, MA: “The tropicalization of moduli space”, August 2011.
- * Logarithmic Geometry and Moduli, CMI, Cambridge, MA: “Overview of Stable Logarithmic Maps”, August 2011.

– **Recent Seminar and colloquium talks.**

- * Berkeley Algebraic Geometry Seminar, February 20, 2007, *Tame stacks and reduction of covers.*
- * Columbia Algebraic Geometry Seminar, December 6, 2007, *Counting curves with tangency conditions: comparison of approaches.*
- * Harvard-MIT Algebraic Geometry Seminar, February 26, 2008, *Counting curves with tangency conditions: comparison of approaches.*
- * UGA Algebraic Geometry Seminar, March 5, 2008, *Counting curves with tangency conditions: comparison of approaches.*
- * Hebrew University Number Theory Seminar, December 30, 2008, *On Jun Li’s proof of the degeneration formula.*
- * MSRI logarithmic geometry seminar: opening lecture, February 2009.
- * MSRI Sponsor meeting lecture, *What’s new in Algebraic Geometry?*, March 2009
- * MSRI Stacks working seminar, *Stacks and their moduli*, April 2009.
- * Stony Brook Algebraic Geometry Seminar, *Logarithmic stable maps*, October 2010.
- * Valley Geometry Seminar, UMass, Amherst: “Logarithmic Gromov–Witten theory”, March 25, 2011.

• **Publications:**

1. With Joe Harris, *Curves and abelian varieties on $W_d(C)$* , Comp. Math. 78, p. 227-238, 1991.
2. *Subvarieties of Abelian Varieties and of Jacobians of Curves*, Ph.D. Thesis, Harvard U., 1991.
3. With L.-Y. Fong, J. Kollár, K. Matsuki and J. Mckernan: *Abundance for threefolds*. In: *Flips and Abundance on Algebraic Threefolds*, J. Kollár, Astérisque 211, 1992.
4. With J.-F. Burnol and J. Kramer: Lecture notes for C. Soulé’s Book *Lectures on Arakelov Geometry*. Cambridge University Press, 1992.
5. With J. F. Voloch, *Toward a proof of the Mordell Lang conjecture in characteristic p* , IMRN, June 1992.

6. *Subvarieties of semiabelian varieties*, *Comp. Math.* 90, 1994, p 37-52
7. *Formal finiteness and the torsion conjecture on elliptic curves*, in *Columbia University Number Theory Seminar*, Astérisque 228 (1995).
8. *Uniformité des points rationnels des courbes algébriques sur toutes les extensions quadratiques et cubiques*, *C.R. Acad. Sc. Paris*, t. 321, Sér. I, p. 755-758, 1995.
9. *Uniformity of stably integral points on elliptic curves*, *Inventiones Math.* 127, 307-317 (1997).
10. With J. F. Voloch, *Lang's conjectures, fibered powers, and uniformity*, *New York J. of Math.* II, p 20-34, 1996. <http://nyjm.albany.edu:8000/j/v2/Abramovich-Voloch.html>
11. *A high fibered power of a family of varieties of general type dominates a variety of general type*, *Inventiones Math.* 128, 481-494 (1997).
12. *Lang maps and Harris's conjecture*, *Israel J. of Math.* 101 (1997), 85-91.
13. With A. J. de Jong, *Smoothness, Semistability, and Toroidal Geometry*, *J. Alg. Geom.* 6 (1997), 789-801.
14. With J. Wang, *Equivariant resolution of singularities in characteristic 0*, *Math. Res. Letters* 4, 427-433 (1997).
15. *A linear lower bound on the gonality of modular curves*, *IMRN* 1996, no 20, 1005-1011.
16. With F. Oort, *Alterations and resolution of singularities*, In: *Resolution of Singularities. A research textbook in tribute to Oscar Zariski*. Eds. H. Hauser, J. Lipman, F. Oort, A. Quirós. *Progress in Math.* vol 181, Birkhäuser 2000.
17. With K. Karu, *Weak semistable reduction in characteristic 0*, *Invent. math.* 139 (2000) 2, 241-273.
18. With A. Vistoli, *Complete moduli for fibered surfaces*, in: *Recent Progress in Intersection Theory*, Proceedings of the *International Conference on Intersection Theory*, Bologna, December 15–20, 1997, G. Ellingsrud, W. Fulton, A. Vistoli (eds.), Birkhäuser, 2000.
19. With K. Matsuki and S. Rashid, *A note on the factorization theorem*, *Tohoku Math. J. (2)* 51 (1999), no. 4, 489–537.
20. With K. Matsuki, *Uniformity of stably integral points on principally polarized abelian varieties of dimension ≤ 2 .*, *Israel J. Math.* 121 (2001), 351–380.
21. With A. Bertram, *The formula $12 = 10 + 2 \times 1$ and its generalizations (Counting rational curves on Hirzebruch surfaces)*, in: *Advances in algebraic geometry motivated by physics (Lowell, MA, 2000)*, 89–100, *Contemp. Math.*, 276, E. Previato, ed., Amer. Math. Soc., Providence, RI, 2001.
22. With F. Oort, *Stable maps and Hurwitz schemes in mixed characteristic*, *Advances in algebraic geometry motivated by physics (Lowell, MA, 2000)*, 89–100, *Contemp. Math.*, 276, E. Previato, ed., Amer. Math. Soc., Providence, RI, 2001.
23. With A. Vistoli, *Compactifying the space of stable maps*, *J. of the Amer. Math. Soc* 15 no. 1. 27-75.
24. With K. Karu, K. Matsuki and W. Włodarczyk, *Torification and factorization of birational maps*, *J. Amer. Math. Soc.* 15 (2002), 531-572.
25. With T. Graber and A. Vistoli, *Algebraic orbifold quantum products*. *Orbifolds in mathematics and physics (Madison, WI, 2001)*, 1–24, Adem, Morava, Ruan, eds., *Contemp. Math.*, 310, Amer. Math. Soc., Providence, RI, 2002.
26. With T. Jarvis, *Moduli of twisted spin curves*, *Proc. Amer. Math. Soc.* 131 (2003), no. 3, 685–699.
27. With J. M. Rojas, *Extending triangulations and semistable reduction*, in *Proceedings of FoCM 2000, special meeting in honor of Steve Smale's 70th birthday* (July 2000, City University of Hong Kong, Hong Kong), pp. 1-13, World Scientific, 2002.
28. With A. Corti and A. Vistoli, *Twisted covers and level structures*, *Special issue in honor of Steven L. Kleiman*. *Comm. Algebra* 31 (2003), no. 8, 3547–3618.
29. With A. Vistoli, *Twisted stable maps and quantum cohomology of stacks*, *ICTP lecture notes*, 2005.
30. With J. C. Chen, *Flops, flips and perverse point sheaves on threefold stacks*, *Journal of Algebra* 290 (2005), no. 2, 372–407.

31. With A. Polishchuk, *Sheaves of t-structures and valuative criteria for stable complexes*, J. reine ang. Mathematik, 590 (2006), 89–130.
32. With T. Graber, M. Olsson, and H.-H. Tseng, *On The Global Quotient Structure of The Space of Twisted Stable Maps to a Quotient Stack*, Journal of Algebraic Geometry 16 (2007) no. 4, 731-751.
33. *Lectures on Gromov–Witten invariants of orbifolds*, in: Enumerative invariants in algebraic geometry and String Theory, M. Manetti, ed., LNM 1947, Springer, 2008.
34. With M. Olsson and A. Vistoli, *On tame Artin stacks*, Ann. Inst. Fourier (Grenoble) 58 (2008), no. 4, 1057–1091.
35. With T. Graber and A. Vistoli, *Gromov–Witten invariants of Deligne–Mumford stacks*, Amer. J. Math. 130 (2008), no. 5, 1337–1398.
36. D. Abramovich, A. Bertram, L. Katsarkov, R. Pandharipande, M. Thaddeus (eds.), *Algebraic Geometry - Seattle 2005 I, II*. American Mathematical Society, 2009.
37. *Birational geometry for number theorists*, in *Arithmetic Geometry*, Darmon, Ellwood, Hassett, Tschinkel (eds), Amer. Math. Soc. 2009.
38. With B. Hassett, *Stable varieties with a twist*, in Classification of Algebraic Varieties, Schiermonnikoog, Faber, van der Geer, Looijenga, eds., EMS 2011.
39. With M. Olsson and A. Vistoli, *Twisted stable maps into tame Artin stacks*, J. Algebraic Geom. 20 (2011), 399-477.

In press:

40. With J. Lubin, *Raynaud’s group-scheme and reduction of coverings*, Lang Memorial Volume, to appear.
41. With Qile Chen, Yuhao Huang, Martin Olsson, Matt Satriano, and Shenghao Sun, *Logarithmic Geometry and Moduli*, In: *Handbook of Moduli*, G. Farkas and I. Morrison (eds.), to appear.
42. With M. Romagny, *Moduli of Galois p -covers in mixed characteristics*, Algebra and Number Theory, to appear.

In progress:

43. With C. Cadman and J. Wise, *Relative and orbifold Gromov–Witten theory*, preprint [arXiv:1004.0981](https://arxiv.org/abs/1004.0981).
44. With J. Denef and K. Karu, *Weak toroidalization over non-closed fields*, preprint [arXiv:1010.6171](https://arxiv.org/abs/1010.6171)
45. With B. Fantechi, *Orbifold techniques in degeneration formulas*, preprint [arXiv:1103.5132](https://arxiv.org/abs/1103.5132)
46. With C. Chen, D. Gillam and S. Marcus, *The Evaluation Space of Logarithmic Stable Maps*, preprint [arXiv:1012.5416](https://arxiv.org/abs/1012.5416)
47. With C. Chen, *Logarithmic stable maps to Deligne–Faltings pairs II*, preprint [arXiv:1102.4531](https://arxiv.org/abs/1102.4531)
48. *Canonical models and stable reduction for plurifibered varieties*, preprint [math.AG/0207004](https://arxiv.org/abs/math/0207004)
49. With C. Cadman, B. Fantechi and J. Wise, *On the moduli stack of expanded degenerations*, in preparation.
50. With C. Xu, *Pseudoideals as DG schemes*, in preparation.
51. With C. Chen, M. Gross and B. Siebert, *Degeneration formulas for Logarithmic maps*, in preparation.
52. With S. Marcus and J. Wise, *Relative and logarithmic Gromov–Witten invariants*, in preparation.
53. With L. Caporaso and S. Payne, *The tropicalization of moduli space*, in preparation.