

Curriculum Vitæ

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Personal Data

Date and Place of Birth: July 8, 1983, Ukraine
Citizenship: Ukraine

Employment

2008-2012 Ritt Assistant Professor, Columbia University, New York, NY

Education

2004-2008 Ph.D. in Mathematics – Harvard University, Cambridge, MA
Advisor: Joe Harris.
Thesis title: Geometry of Severi varieties and the moduli space of curves.
2001-2004 S.B. in Mathematics – Massachusetts Institute of Technology, Cambridge, MA

Publications and Preprints

1. M. Fedorchuk and I. Pak, *Rigidity and polynomial invariants of convex polytopes*, Duke Math. J., vol. 129, no. 2 (2005), 371–404.
2. M. Fedorchuk, *Severi Varieties and the Moduli Space of Curves*, Ph.D. thesis, Harvard University, 2008.
3. M. Fedorchuk and D. Smyth, *Ample divisors on moduli spaces of pointed rational curves*, J. Algebraic Geom., vol. 20 (2011) no. 4, 599–629.
4. M. Fedorchuk, *Moduli of weighted stable curves and log canonical models of $\overline{M}_{g,n}$* , Math. Res. Lett., vol. 18 (2011) no. 4, 1–13.
5. M. Fedorchuk and D. Smyth, *Alternate Compactifications of Moduli Spaces of Curves*, (2010). *Handbook of Moduli*, editors Gavril Farkas and Ian Morrison. To be published by International Press in 2012. Available at [arXiv:1012.0329](https://arxiv.org/abs/1012.0329) [math.AG]
6. M. Fedorchuk, *Moduli spaces of hyperelliptic curves with A and D singularities*, (2010). Available at [arXiv:1007.4828](https://arxiv.org/abs/1007.4828) [math.AG]
7. J. Alper, M. Fedorchuk, and D. Smyth, *Singularities with \mathbb{G}_m -action and the log minimal model program for \overline{M}_g* , (2010). Available at [arXiv:1010.3751](https://arxiv.org/abs/1010.3751) [math.AG]
8. M. Fedorchuk, *Cyclic covering morphisms on $\overline{M}_{0,n}$* , (2011). Available at [arXiv:1105.0655](https://arxiv.org/abs/1105.0655) [math.AG]
9. M. Fedorchuk, *The final log canonical model of the moduli space of stable curves of genus 4*, Int. Math. Res. Not. IMRN (2012) doi: 10.1093/imrn/rnr242, 23 pp.

10. J. Alper, M. Fedorchuk, and D. Smyth, *Finite Hilbert stability of (bi)canonical curves*, (2011). Available at [arXiv:1109.4986](https://arxiv.org/abs/1109.4986) [math.AG]
11. J. Alper, M. Fedorchuk, and D. Smyth, *Finite Hilbert stability of canonical curves, II. The even-genus case*, (2011). Available at [arXiv:1110.5960](https://arxiv.org/abs/1110.5960) [math.AG]
12. M. Fedorchuk and D. Jensen, *Stability of 2nd Hilbert points of canonical curves*, (2011). Available at [arXiv:1111.5339](https://arxiv.org/abs/1111.5339) [math.AG]

Conferences organized

- *Log minimal model program for moduli spaces* (with Jarod Alper, Brendan Hassett, and David Smyth), the American Institute of Mathematics (AIM), December 2012.

Service

- Referee for *Transactions of the AMS*, *International Mathematics Research Notices*, *Journal of Pure and Applied Algebra*, *Proceedings of the “Compact Moduli and Vector Bundles”*, *Proceedings of the “Geometry and Arithmetic”*.
- Reviewer for the NSA-AMS Young Investigator Grant Program (2010, 2011).
- Organized seminar on *GIT, moduli spaces, and deformation theory* for postdocs and graduate students, Columbia University, Fall 2011 – Spring 2012.
- Senior postdoc, MRC 2010 Workshop on Birational Geometry and Moduli Spaces.
As a senior postdoc, mentored graduate students and led the working group focusing on *Minimal Model Program for the Moduli Space of Curves*.
- Served on thesis defense committees of Matt Deland (Columbia University, 2009), Mingmin Shen (Columbia University, 2010).
- Co-organized (with Johan de Jong) graduate student seminar on *Higher-dimensional algebraic geometry*, Columbia University, Spring 2009.
- Putnam preparation lectures at Columbia University, Fall 2008, Fall 2010, Fall 2011.

Invited Talks

2012

- Algebraic Geometry Northeastern Series (AGNES) Conference, UMass Amherst, MA, March 2012 (not yet given).
- CUNY Representation Theory Seminar, New York, NY, March 2012 (not yet given).
- Oklahoma State University Colloquium: *Geometry of moduli spaces and Geometric Invariant Theory*
- Cornell University Colloquium: *Geometry of moduli spaces and Geometric Invariant Theory*
- University of Colorado Boulder Kempner Colloquium: *Geometry of moduli spaces and Geometric Invariant Theory*

- Boston College Colloquium: *Geometry of moduli spaces and Geometric Invariant Theory*
- Michigan State University Colloquium: *Geometry of moduli spaces and Geometric Invariant Theory*

2011

- Columbia University Algebraic Geometry Seminar: *Moduli spaces of singular curves via GIT for canonical curves.*
- Algebraic Cycles and the Geometry of Group Orbits, Australian National University: *Moduli spaces of singular curves via GIT for canonical curves.*
- Workshop on Moduli and Birational Geometry, Pohang University of Science and Technology: *GIT and the modularity principle for the log MMP for \overline{M}_g .*
- Moduli spaces and moduli stacks, Columbia University, New York: *Cyclic covering morphisms on moduli spaces of stable pointed rational curves.*
- SUNY Stony Brook Algebra, Geometry and Physics Seminar: *Modularity of log canonical models of the moduli space of stable curves.*
- Front Range Algebra, Geometry and Number Theory Seminar (University of Colorado at Boulder): *Modularity of log canonical models of the moduli space of stable curves.*
- University of Illinois at Chicago Algebraic Geometry Seminar: *Modularity of log canonical models of the moduli space of stable curves.*
- Pohang University of Science and Technology: Mini-course (3 lectures) entitled *Deformations of curve singularities and the moduli space of curves.*
- Korea Institute for Advanced Study (KIAS): *Towards the log minimal model program for \overline{M}_g .*

2010

- Workshop on Moduli and Birational Geometry, Pohang University of Science and Technology: *Quasi-admissible hyperelliptic covers with A and D singularities.*
- Harvard-MIT Algebraic Geometry Seminar: *Spaces of hyperelliptic curves with AD singularities.*
- Princeton University Algebraic Geometry Seminar: *Spaces of hyperelliptic curves with simple singularities.*

2009

- Columbia University Algebraic Geometry Seminar: *Spaces of hyperelliptic curves with simple singularities.*
- Rice University Algebraic Geometry Seminar: *Spaces of hyperelliptic curves with simple singularities.*
- The Valley Geometry Seminar (UMass Amherst): *Spaces of hyperelliptic curves with simple singularities.*

2008

- American Mathematical Society Eastern Section Meeting, Special Session on Algebraic Geometry: *Moduli and enumerative geometry of curves on rational ruled surfaces.*
- UC Riverside Algebraic Geometry Seminar: *Linear sections of the Severi variety and applications.*

2007

- Harvard-MIT Algebraic Geometry Seminar: *Linear sections of the Severi variety and applications.*
- Columbia University Algebraic Geometry Seminar: *Linear sections of the Severi variety and applications.*
- SUNY Stony Brook Algebra, Geometry and Physics Seminar: *Geometry of one-parameter families of plane curves.*

Teaching

- Spring 2012: Calculus III (two sections), Columbia University
- Fall 2011: Algebraic Number Theory, Columbia University
- Spring 2011: Modern Algebra I, Honors Linear Algebra, Columbia University
- Fall 2010: Calculus I, Columbia University
- Spring 2010: Algebraic Geometry (Schemes), Calculus III, Columbia University
- Fall 2010: Commutative Algebra, Columbia University
- Spring 2009: Calculus I, Columbia University
- Fall 2008: Calculus I (two sections), Columbia University
- Spring 2008: Linear Algebra with Differential Equations, Harvard University
- Fall 2006: Course assistant, Algebraic curves and abelian varieties, Harvard University
- Fall 2006: Linear Algebra with Differential Equations, Harvard University
- Fall 2005: Introduction to Calculus, Harvard University