Melkana Brakalova - Trevithick, CV

Mathematics Department, Fordham University
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April 24, 2023

Academic Degrees

- Ph.D. (Geometric Function Theory) Thesis: *On the Asymptotic Behavior of Quasiconformal and Conformal Strip Mappings*, Sofia University, Bulgaria, 1988.

  Advisor: Acad. L. Iliev, Bulgarian Academy of Sciences, Institute of Mathematics, Sofia, Bulgaria.

  Consultant: A. A. Goldberg, Lvov State University, Ukraine, USSR.

- M.S. (Complex Analysis) Thesis: *On the boundary behavior of conformal maps of parabolically exhaustible symmetric strips*, Sofia University, Bulgaria, 1981.

  Advisor: V. Alexandrov, Bulgarian Academy of Sciences, Institute of Mathematics, Sofia, Bulgaria.

- Ed.M. (Mathematics Education) Harvard University, Cambridge, MA, 1993.

Academic Positions

- Visiting Research Scholar, CUNY Graduate Center, NY, August 2022–August 2023 (on leave from Fordham.)

- *Professor*, Fordham University, Bronx, NY, September 2020–

- *Associate Professor*, Fordham University, Bronx, NY, September 2011–August 2020.

- *Visiting Scientist*, Max Planck Institute for Mathematics, Bonn, Germany, September 1– September 30 and December 7– December 22, 2017.

- *Senior Fellow*, Institute for Pure and Applied Mathematics, UCLA, program on Interactions between Analysis and Geometry, March 11, 2013 – June 14, 2013.

- *Assistant Professor*, Fordham University, Bronx, NY, September 2004 – June 2011.

- *Teacher of Mathematics*, The Hotchkiss School, Lakeville, CT, September 1993-2004, on leave 2002–2003 (Sabbatical)

- *Visiting Professor*, Institute for Mathematical Sciences and Department of Mathematics, SUNY, Stony Brook, NY, September 2002 – June 2003.

- *Analytics Instructor*, KSG Summer Program, Harvard University, Cambridge, MA, August 1995.

- *Visiting Lecturer*, Tufts University, Medford, MA, Spring 1993.

- *Assistant Professor*, American University in Bulgaria, Blagoevgrad, BG, September 1991 – June 1992.

- *Researcher*, Bulgarian Academy of Sciences, Institute of Mathematics, Sofia, Bulgaria, 1986 – 1991.

- *Visiting Assistant Professor*, Washington University, St. Louis, MO, September 1990 – June 1991.

- *Visiting Lecturer*, University of Minnesota, Minneapolis, MN, September 1989 – June 1990.

- *Wissenschaftliche Hilfskraft*, University of Regensburg, Regensburg, West Germany, Fall 1988 – Spring 1989.

- *Teaching Assistant*, Sofia University, Sofia, Bulgaria, Fall 1986.

- *Teaching Assistant*, High Institute of Engineering and Architecture, Sofia, Bulgaria, Fall 1984.

University Administrative Positions

- *Department Chair*, Fordham University, Mathematics Department, Bronx, NY, June 2020 – July 2021.

- *Associate Chair*, Fordham University, Mathematics Department, Rose Hill campus, Bronx, NY, July 2019 – July 2020;

- *Associate Chair*, Fordham University, Mathematics Department, Lincoln Center campus, Manhattan, NY, July 2018 – July 2020.

- *Department Chair*, Fordham University, Mathematics Department, Bronx, NY, July 2011 – July 2014 (on leave Spring 2013).

Research papers/book chapters

A. Published

1. M Brakalova-Trevithick, *Properties of quasisymmetric homeomorphisms in the Weil-Petersson class*, Teichmüller Theory and Grothendieck-Teichmüller Theory, Editors: Lizhen Ji, Athanase Papadopoulos, Weixu Su, Higher Education Press, Beijing, 2022, p. 51—65.

2. V. Alberge and M. Brakalova, *On Smoothness of the elements of some integrable Teichmuller spaces.* Math. Rep. **23(73)**, 95–105, 2021. **MR4275907**

3. V. Alberge, M. Brakalova and A. Papadopoulos *Teichmüller's work on the type problem.* in *Handbook of Teichmüller Theory* (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020, arXiv:1912.11291. **MR4321192**

4. V. Alberge, M. Brakalova and A. Papadopoulos *A commentary on Teichmüller's paper "Untersuchungen über konforme and quasikonforme Abbildung",* (Investigations on conformal and quasiconformal mappings) in *Handbook of Teichmüller. Theory* (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020, arXiv:1912.11290. **MR4321191**

5. M. Brakalova and M. Weiss, translation from the German of a paper by O. Teichmüller, *Investigation on conformal and quasiconformal mappings.* (Unterſuchungen über konforme und quaſikonforme Abbildung, Deutsche Math. 3 (1938), 621–678) in *Handbook of Teichmüller Theory* (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020.

6. M. Brakalova, translation from the German of a paper by H. Grötzsch *On the distortion of univalent non-conformal mappings and a related extension of the Picard theorem.* (*Über die Verzerrung bei schlichten nichtkonformen Abbildungen and über eine damit zusammenhängende Erweiterung des Picardschen Satzes.* Berichte über die Verhandlungen der Sachsischen Akad. der Wissenschaften zu Leipzig Math.-Physische Klasse. Bd. 80 (1928), 503–507 von Herbert Grötzsch in Leipzig Vorgelegt von Herrn Koebe) in *Handbook of Teichmüller Theory* (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020

7. M. Brakalova, translation from the German of a paper by H. Grötzsch *On closest-to-conformal mappings of schlicht domains II.* (*Über möglist konformen Abbildungen von schlichten Bereichen.* Berichte ber die Verhandlungen der Sachsischen Akad. der Wissenschaften zu Leipzig Math.-Physische Klasse. Bd. 84 (1932), 114–120. von Herbert Grötzsch in Leipzig Vorgelegt von Herrn Koebe) in *Handbook of Teichmüller Theory* (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020.

8. M. Brakalova, Translation of a paper by H. Grötzsch *On Some Extremal problems of the conformal mapping II.* (from German: *Über einige Extremalprobleme der konformen Abbildung II* Berichte über die Verhandlungen der Sachsischen Akad. der Wissenschaften zu Leipzig Math.-Physische Klasse. Bd. 80 (1928), 497–502 von Herbert Grötzsch in Leipzig, Vorgelegt von Herrn Koebe) in *Handbook of Teichmüller Theory*, (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020.

9. M. Brakalova, Translation from the German of a paper by O. Teichmüller, *An application of quasiconformal mappings to the type problem.* (*Eine Anwendung quasikonformer Abbildungen auf das Typenproblem* Deutsche Math. 2, 321–327 (1937)) in *Handbook of Teichmüller Theory* (A. Papadopoulos, ed.), Volume VII, EMS Publishing House, Zürich, 2020.

10. M. Brakalova, *Symmetric properties of the p-integrable Teichmüller spaces.* Analysis and Mathematical Physics, **8** (2018) 541–549, Springer Verlag. **MR3881012**

11. M. Brakalova, I. Markina and A. Vasil'ev, *Extremal functions for modules of systems of measures.* J. d'Analyse Math. **133**, 1 (2017) 335–359. (arXiv:1409.1626) **MR3736495**

12. M. Brakalova, I. Markina and A. Vasil'ev, *Modules of systems of measures on polarizable Carnot groups.* Arkiv för Mat. **54** (2016) 2, 371–401. (originally submitted to arXiv:1409.1626) **MR3546358**

13. M. Brakalova *On local stability of solutions to the Beltrami equation with degeneration.* Proceedings of International Conference in Complex Analysis and Applications'13, Sofia (2013) 67–77. **MR3312225**

14. M. Brakalova *Sufficient and necessary conditions for conformality. Part II. Analytic viewpoint.* Ann. Acad. Sci. Fenn. **35** (2010) 235–254. **MR2643407**

15. M. Brakalova *Sufficient and necessary conditions for conformality. Part I. Geometric viewpoint.* Complex Variables and Elliptic Equations, issue dedicated to Cabiria Andreian - Cazacu) **57** (2010) 137–155. **MR2599616**

16. M. Brakalova, *Boundary extension of μ - homeomorphisms.* Complex and Harmonic Analysis, Edited by: A. Carberry, P. Duren, D. Khavinson and A. G. Siskakis (2007) 231–247. **MR2387293**

17. M. Brakalova and J. A. Jenkins, *On solutions of the Beltrami equation II.* Publ. l'Inst. Math., 75 (2004) 3–8. **MR2107992**

18. M. Brakalova and J. A. Jenkins, *On a paper of Carleson.* Ann. Acad. Sci. Fenn, **27** (2002) 485–490. **MR1922202**

19. M. Brakalova and D. Coughlin, *Teaching fractals and dynamical systems at the Hotchkiss school*, in *Fractals, Computer Graphics, and Mathematics Education*, edited by B. Mandelbrot and M. Frame, MAA Notes No. 58 (2002) 35–48.

20. M. Brakalova and J. A. Jenkins, *On solutions of the Beltrami Equations with* $\|\mu\|_\infty = 1$. J. Anal. Math., **76** (1998) 67–92. **MR1676936**

21. M. Brakalova and J. A. Jenkins, *On the local behavior of certain homeomorphisms. II.* Zap. Nauchn. Sem. S. Petersburg. Otdel. Mat. Inst. Steklov. (POMI) 237 (1997), Anal. Teor. Chisel i Teor. Funkts. **14**, 11 – 20, 227; translation in J. Math. Sci. (New York) 95 (1999) no. 3, 2178–2184 **MR1691279**

22. M. Brakalova and J. A. Jenkins, *On the local behavior of certain homeomorphisms.* Kodai Math. J. 17 (1994) 201–213. **MR1282210**

23. M. Bracalova *A Generalization of the Teichmüller theorem.* Complex analysis, Joensuu 1987, Lecture Notes in Math., **1351**, Springer Verlag, Berlin (1988) 69–77. **MR0982073**

24. M Bracalova *On the asymptotic representation of some quasiconformal mappings.* Complex analysis, Publ. House Bulgar. Acad. Sci., Sofia (1989) 49–83. **MR1127618**

25. M. Brakalova *On the asymptotic behavior of some quasiconformal and strip conformal mappings.* C. R. Acad. Bull. Sci., (I) 41 (1988) 11–14. **MR0937105**

26. M. Bracalova *On asymptotic behavior of some conformal strip mappings.* Constructive theory of functions, (Varna, 1987), Publ. House Bulgar. Acad. Sci., Sofia (1988) 65–71. **MR0914511 (89a:30004)**

27. Bracalova, M. *Asymptotic behavior of strip mappings of some symmetric strips.* Complex analysis and applications, Sofia (1986) 127–134. **MR1127618**

B. **In print**

1. M. Brakalova, *Properties of quasisymmetric homeomorphisms in the Weil-Petersson class.* Teichmüller theory and its impact, Advanced Lectures in Mathematics (ALM) book series, International Press and Higher Education Press of China, based on the Workshop on Grothendieck–Teichmüller Theories, Chern Institute, Nankai University, China, 2016.

C. **Work in progress**

1. M. Brakalova *Sufficient and Necessary Conditions for Asymptotic Homogeneity.*

2. M. Brakalova *On Teichmüller's Modulsatz.*

3. M. Brakalova *Technology and visualization in the classroom.*

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D. **Citations, as of February 1st 2023**

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- According to Google Scholar, I have 202 citations.

- According to Research Gate, I have 165 citations and 1629 reads.

- According to Mathematical Reviews, I have 103 citations by 70 authors.

- My research has been cited in more than 6 research monographs.

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Teaching Awards

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- Arthur White Teaching Chair, Hotchkiss School, 2000 - 2004.

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Undergraduate/Graduate Courses Taught

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1. Euclidean and Non-Euclidean Geometry

2. Discrete Mathematics

3. Linear Algebra I and II

4. Multivariable Calculus I and II

5. Finite Mathematics

6. Math Methods in Business I and II

7. Calculus I and II

8. Applied Calculus

9. Computer Assisted Math Problem Solving (with MAPLE)

10. Mathematical Modeling

11. Differential Equations: Dynamics and Chaos

12. Analytics (quantitative reasoning course)

13. Differential Equations and Applications

14. Introduction to Differential Geometry

15. Ordinary and Partial Differential Equations

16. Introduction to Elementary Mathematics

17. Lines of Reasoning: Geometry as a Tool for Critical Thinking

18. Statistics

19. Introduction to Non–Euclidean geometry

20. Complex Analysis

21. Math Curriculum 7–12

22. Topics in Geometry

Courses/tutorials taught at The Hotchkiss School.

1. Algebra

2. Geometry

3. Precalculus

4. BC Calculus

5. Multivariable Calculus

6. Linear Algebra

7. Fractals and Dynamical Systems.

8. Introduction to Algebraic Topology and Knot Theory

9. College Geometry

10. Real and Complex Analysis

11. Electrostatics and Electromagnetism

12. Mathematical Logic,

13. Advanced Euclidean Geometry.

Undergraduate tutorials, undergraduate research and theses.

1. *The Cross Ratio and Hyperbolic Geometry.* Student: Olivia Hughes, undergraduate research, Spring 2020.

2. *Discrete Mathematics,* Student: Katy Belcher, undergraduate tutorial, Spring 2020.

3. *Study of the affect of PM2.5 levels in the Bronx Belmont Community.* Student: Natalie Ward, supervised research, Summer/Fall 2018.

4. *The Shape of Things: An Assessment of Current US High School Geometry Standards and Performance.* student: Christopher Boland, honors thesis, Spring 2017.

5. *Möbius Transformations and Their Invariant Curves.* student: Sophia Nolas, honors thesis, Spring 2017.

6. *Hyperbolic Geometry from complex-analytic point of view*, Student: Sophia Nolas, undergraduate research, Fall 2015, Spring 2016.

7. *Minimal Surfaces and Harmonic mappings, Gauss Curvature, distortion and the Shear Construction.* student: Emily Dinan, honors thesis, Fall 2013.

8. *Minimal Surfaces, Harmonic Mappings, and Calculus of Variations.* Student: Emily Dinan, undergraduate research, Fall 2012.

9. *Differential Topology.* Student: Emily Dinan, undergraduate tutorial, Spring 2011.

10. Student: Emily Bendler, May 2006, honors thesis.

Grants, Fellowships, Scholarships

- *The Flipped-Hybrid Approach to Mathematical Instruction*, Challenge Grant, leader, contributing writer: Patrick McFaddin, Summer 2020, $10,000 and Winter 2021, $ 9800.

- Faculty Fellowship, Fordham University, Spring 2008, Spring 2013, Fall 2017, Academic year 2022 – 23 (awarded).

- Faculty Research Grant, Fordham University, 2005 – 06, 2006 – 07 and 2007 – 08, 2013, 2014, 2016.

- Co-PI Fordham University NSF Robert Noyce Teacher Scholarship Program PI: Usha Kotelawala up to 2016, Philip Dituri 2016–2019; Co-PI: Melkana Brakalova, Janusz Golec , Robert Graham; Award Number : 1240070, Award Amount: $1,168,217, 2013 – 2019.

- Co - PI, NSF joint grant with Graduate School of Education, Fordham University, " *Analyzing and Improving Teacher Practices to Foster Discourse in 9th and 10th Grade Mathematics Classes*", PI Rita Kabasakalian, Subject Award Number : 0554219, awarded amount: $ 350,000, 2006 – 2009.

- Summer Research Stipend, Bepler Fund, Fordham University, Bronx, NY, 2005.

- Sabbatical Leave, Hotchkiss School, Lakeville, CT, 2002–2003.

- Faculty Research Grants (on an yearly basis) Hotchkiss School, Lakeville, CT, 1994–2004.

- Emma Gildersleeve Lane Scholarship, Harvard University, Cambridge, MA, 1993.

- Graduate Fellowship, Sofia University, Sofia, Bulgaria, 1983 – 1986.

University and Mathematics Departmental Service, Fordham University, Bronx, NY

- *Hiring Committee co-Chair*, Mathematics Department, Fall 2017– Spring 2018.

- *Hiring committee member,* Fall 2018 – Spring 2022.

- *Senator*, Faculty Senate, 2018 – 2019.

- *Chair* , JMH Space Planning Committee, Mathematics Department, Fall 2017 – Spring 2019, faculty member, 2011 – 2020.

- *Search committee faculty member* for Math Ed Visiting Professor position, GSE, Spring 2016.

- *faculty member, TRAC (Tenure and Reappointment Appeals Committee)*, 2015– 2018.

- SEC (Science Education Committee), faculty member, 2014–2019.

- University Liberal Arts Education Task Force, faculty member, 2013 – 2015.

- Faculty Evaluation Committee, faculty member, 2015 – 17.

- Undergraduate Curriculum Committee, faculty member, 2011 – 2012.

- Merit Committee, faculty member, 2011 – 2021.

- Technology Committee and the Faculty Life Committee, faculty member, 2008 – 2009.

- (URS) Undergraduate Research Symposium at Fordham College at Rose Hill, 2007.

- Pi Mu Epsilon, Fordham Chapter, Faculty Advisor, 2005 – 2009.

- Faculty Advisor, MAA Student Chapter, 2004 – 2010.

- Faculty Advisor, Fordham Math Club, Fordham University, 2004 – 2011.

- Clare Booth Luce Committee, faculty member, 2008 – 2017.

- Co-organizer, Mathematics Department Colloquium, 2008 – 09.

- Freshman advisor, Rose Hill College, Fordham University, 2013 – 2015.
- FUMPTY (Fordham University Math Program for Talented Youth), manager, 2012 – 2016.

Mathematics Departmental Service, Hotchkiss School, Lakeville, CT

- Faculty Advisor, Math Club, Math Team (2000 - 2004) (for ASHME, AIME and USA Mathematical Olympiad).

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Referee, Research Papers

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- Analysis and Mathematical Physics
- Complex Variables and Elliptic Equations
- Annales Academiae Scientarum Fennicae
- Pure and Applied Mathematics Quarterly
- Matematicki Vesnik
- Publications de l'Institute Mathematique
- Proceedings of the American Mathematical Society

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Reviewer for Mathematical Reviews

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1. **MR4422021** Reviewed Gutlyanskiĭ, Vladimir; Ryazanov, Vladimir; Yakubov, Eduard; Yefimushkin, Artyem On the Hilbert boundary-value problem for Beltrami equations with singularities. J. Math. Sci. (N.Y.) 254 (2021), no. 3, 357–374. (Reviewer: Melkana A. Brakalova-Trevithick) 30C62 (31A10 31A15)

2. **MR4047701** Baisón Olmo, Antonio L.; Cruz Barriguete, Victor A. The conjugate Beltrami equation with coefficient in Morrey spaces. Collect. Math. 71 (2020), no. 1, 93–102. 30C62 (30G20 46E30)

3. **MR4112270** Gutlyanskii, Vladimir; Ryazanov, Vladimir; Yakubov, Eduard; Yefimushkin, Artyem On Hilbert boundary value problem for Beltrami equation. Ann. Acad. Sci. Fenn. Math. 45 (2020), no. 2, 957–973. 30C62 (30E25 31A05 34M50 35F45 35J61)

4. **MR4055432** Krushkal' S. L. On the Fredholm eigenvalues of unbounded polygons. (Russian) ; translated from Sibirsk. Mat. Zh. 60 (2019), no. 5, 1145–1152 Sib. Math. J. 60 (2019), no. 5, 896–901 30C35

5. **MR3890562** Afanaseva, Elena S.; Ryazanov, Vladimir I.; Salimov, Ruslan R. Toward the theory of Sobolev-class mappings with a critical exponent. (Russian) Ukr. Mat. Visn. 15 (2018), no. 2, 154–176, 295; translation in J. Math. Sci. (N.Y.) 239 (2019), no. 1, 1–16. 30C65 (30C62 31B25)

6. **MR3865811** Sevostyanov, E. A. On the boundary behavior of some classes of mappings. (Russian) Zap. Nauchn. Sem. S.-Peterburg. Otdel. Mat. Inst. Steklov. (POMI) 467 (2018), Issledovaniya po Lineinym Operatoram i Teorii Funktsii. 46, 169–190; translation in J. Math. Sci. (N.Y.) 243 (2019), no. 6, 934–948. 30C65 (30C62 30E25 31A20 31A25)

7. **MR3829871** Tishabaev, Zh. K.; Otaboev, T. U.; Khursanov, Sh. Ya. Residue and the argument principle for A(z)-analytic functions. (Russian) Translation in J. Math. Sci. 245 (2020), no. 3, 350–358. Itogi Nauki Tekh. Ser. Sovrem. Mat. Prilozh. Temat. Obz., 144, Papers from the Scientific Conference "Problems in Modern Topology and its Applications" (Russian), 56–64, Vseross. Inst. Nauchn. i Tekhn. Inform. (VINITI), Moscow, 2018. 30G20 (30C62 30E20)

8. **MR3801361** Shabalin, P. L. Karabasheva, E. N. On the univalence of mappings performed by the generalized Christoffel-Schwarz formula. (Russian) Differential equations. Mathematical analysis (Russian), 81–86, Itogi Nauki Tekh. Ser. Sovrem. Mat. Prilozh. Temat. Obz., 143, Vseross. Inst. Nauchn. i Tekhn. Inform. (VINITI), Moscow, 2017. 30C20 (30C35)

9. **MR3155690** Ryazanov, Vladimir; Salimov, Ruslan; Srebro, Uri; Yakubov, Eduard On boundary value problems for the Beltrami equations. Complex analysis and dynamical systems V, 211–242, Contemp. Math., 591, Israel Math. Conf. Proc., Amer. Math. Soc., Providence, RI, 2013. (Reviewer: Melkana A. Brakalova–Trevithick) 30C62 (30G20 35J46 35J56 35J70)

10. **MR2962329** Cristea, Mihai Dilatations of homeomorphisms satisfying some modular inequalities. Rev. Roumaine Math. Pures Appl. 56 (2011), no. 4, 275–282. 30C65

11. **MR2865511** Campbell, Daniel; Hencl, Stanislav A note on mappings of finite distortion: examples for the sharp modulus of continuity. Ann. Acad. Sci. Fenn. Math. 36 (2011), no. 2, 531–536. (Reviewer: Melkana A. Brakalova-Trevithick) 30C65.

12. **MR2760597** Afyan, S. K. Exact solutions of the Beltrami equations in some special cases. (Russian) Izv. Nats. Akad. Nauk Armenii Mat. 45 (2010), no. 3, 35–40; translation in J. Contemp. Math. Anal. 45 (2010), no. 3, 170–173 (Reviewer: Melkana A. Brakalova-Trevithick) 30G20 (30C62).

13. **MR2731709** Shen, Yuliang Fredholm eigenvalue for a quasi-circle and Grunsky functionals. Ann. Acad. Sci. Fenn. Math. 35 (2010), no. 2, 581–593. (Reviewer: Melkana A. Brakalova-Trevithick) 30C62 (30C55 47A75 47B37).

Reviewer, Undergraduate Textbooks

- Key College Publishing, 2007

- W.H. Freeman, 2007,

- Cambridge University Press, 2017.

Invited research talks

- Analysis Seminar, California State University, Fullerton *On the integrable Teichmüller spaces*, April 18th, 2023.

- *X* Symposium "Mathematics and Applications", Faculty of Mathematics, University of Belgrade, *Properties of the p-integrable subspaces of the universal Teichmüller space for $0 < p \leq 1$*, Dec 6 – 7, 2019.

- Dartmouth College, Hannover, New Hampshire, Geometry Seminar, *On the p-integrable Teichmüller spaces from quasiconformal mappings point of view*, May 28, 2019.

- Honorable Special Session, Forum on Analysis, Geometry and Mathematical Physics, ICAMI (International Conference on Applied Mathematics and Informatics), 2017, San Andres Island, Colombia, November 28th–Dec 3rd, 2017.

- IRMA (Institute for Advanced Mathematical Research), University of Strasbourg, France, *On local and boundary properties of q.c. maps and the universal Teichmüller space*, April 21st, 2017.

- BCC Colloquium, CUNY, Bronx Community College, Bronx, NY, *Quasisymmetric maps and the Weil–Petersson class*, March 7, 2017.

- Chern Institute of Mathematics, Nanakai University, Workshop on Grothendieck-Teichmüller Theories, *Weil–Peterson class and symmetric maps*, July 24–30, 2016.

- University of Bergen, Analysis seminar, *Conformal invariants and Teichmüller's Modulsatz in the plane*, Bergen, Norway, June 3rd, 2014.

- Universität Bern, Analysis seminar, *Conformality at a point for μ-homeomorphisms*, Bern, Switzerland, March, 2009.

- CUNY Graduate Center, Complex Analysis and Dynamical Systems seminar, *On conformality at a point using a geometric approach*, NY, December, 2008.

- XIth Romanian–Finnish seminar, *Excursion through conformality*, Alba Iulia, Romania, August 14–August 19, 2008.

- Complex and Harmonic Analysis conference, Thessaloniki, Greece, *On the boundary behavior of μ - homeomorphisms*, May 25–27, May 2006.

- MSRI, Berkeley, Workshop for Women in Mathematics: An Introduction to elliptic partial differential equations, *On the Beltrami equation and $\mu-$ homeomorphisms*, August 11 – August 12, 2005.

- Washington and Lee University, Southeastern Analysis meeting, Lexington, *On the degenerate Beltrami equation and $\mu-$ homeomorphisms*, VA, April 8–April 9, 2005.

- CUNY Graduate Center, NY, Complex Analysis seminar, *On solutions of the Beltrami equation*, April 2004.

- University of Michigan, Ann Arbor, MI, Geometric Function Theory Seminar,*A geometric approach to existence of solutions of the Beltrami equation*, November 2003.

- SUNY, Stony Brook, NY, Complex Analysis and Geometry seminar, *On the measurable Riemann mapping theorem*, December 2002.

- University of Stony Brook, SUNY, Stony Brook, USA, Dynamics Learning seminar, *Newton's method for cubic polynomials*, September 2002.

- Washington University, St. Louis, MO, Complex Analysis seminar, *On a paper of Carleson*, March 2002.

- Washington University, St. Louis, MO, Complex Analysis seminar, *On the existence of solutions of the Beltrami equation*, November 1994.

- Aristotle University, Thessaloniki, Greece, Analysis seminar, Introductory lectures in the theory of plane quasiconformal mappings, January 1992.

- University of Michigan, Ann Arbor, MI, Geometric Function Theory seminar, *On a problem of Teichmüller*, July 1991.

- University of Kentucky, Lexington, KY, PDE and Analysis seminar, *On the local behaviornof solutions of the Beltrami equation*, May 1991.

- Washington University, St. Louis, MO, Analysis seminar, *On the behavior of conformal and quasiconformal mappings*, May 1990.

- Washington University, St. Louis, MO, USA, Analysis seminar, *On the necessity of Hamilton's condition*, and *On a problem of Teichmüller*, September 1990.

- University of Minnesota, Minneapolis, MN, USA, Real Analysis seminar, *On the local behavior of quasiconformal mappings and their applications*, three lectures, September 1989 – June 1990.

- University of Regensburg, Regensburg, West Germany, Introduction to the theory of plane quasiconformal mappings, series of lectures, September 1988 – March 1989.

- $XIII^{th}$ R. Nevanlinna colloquium, Joennsu, Finland, *A generalization of Teichmüller–Wittich theorem*, August 1987.

- Lvov State University, Lvov, USSR, Real and Complex Analysis seminar, *On the behavior of quasiconformal mappings at a point*, October 1986.

Contributed Talks, Conference Presentations, Symposiums, Seminars

- Louis Stokes Alliance for Minority Participation, California State U, Fullerton, *STEM undergraduate Research Opportunities–Trends, Past, Present, Future*, April 18, 2023.

- Discrete Math days, Williams College, *Online interactive vs regular textbook approaches to teaching Discrete Mathematics*, Williamstown, MA, USA, April 24th, 2021.

- with V. Alberge, 15th Romanian–Finnish Analysis Seminar (RomFin2019), Turku, Finland, *On symmetric and smooth properties of p-integrable Teichmüller spaces*, June 10–12, 2019.

- with Emily Dinan, Undergraduate Research Symposium, *Minimal Surfaces and Harmonic mappings, Gauss Curvature, distortion and the shear construction*, Fordham University, April 2014. Presenter: Emily Dinan

- Complex Analysis and Applications '13, *On local stability of solutions to the Beltrami equation*, Sofia, Oct 31- Nov. 2, 2013.

- Complex Analysis and Dynamical Systems IV, *Circle-like behavior and homogeneity at a point*, Nahariya, May 18-22, 2009.

- Special Session on Geometric Function Theory and Analysis on Metric Spaces, 2009 , Spring Central Sectional Meeting of the AMS, *Circle-like behavior of homeomorphisms at a point and asymptotic homogeneity*, University of Illinois, Urbana-Champaign, IL, March 27 – 29, 2009.

- AMS and MAA Joint Mathematics Meeting, *On a paper of Carleson*, San Diego, CA, January 2002.

- AMS and MAA Joint Mathematics Meeting, *On solutions of the Beltrami equation*, Baltimore, MD, January 1998.

- International Conference on Complex Analysis and its Applications, *On a problem of Teichmuller* Varna, Bulgaria, September 1991.

- Symposium in Complex Analysis, University of Wisconsin, *On the local behavior of solutions of Beltrami equations* Madison, WI, June 1991.

- AMS and MAA Joint Mathematics Meeting, San Francisco, CA, USA, *Behavior of quasiconformal mappings at a point*, January 1991.

- International Colloquium on Complex Analysis and Sixth Romanian - Finish Seminar, *Asymptotic expansion of some conformal strip mappings*, University of Bucharest, Romania, June 1989.

- International Conference on Complex Analysis, *On the representation of quasiconformal and conformal mappings*, Herzeg Novi, Yugoslavia, May 1988.

- International Conference on Complex Analysis and Its Applications, *On the asymptotic representation of some quasiconformal mappings*, Varna, Bulgaria, May 1987.

- International Conference on Constructive Theory of Functions, *On the asymptotic behavior of some conformal strip mappings*, Varna, Bulgaria, May 1987.

- International Conference on Complex Analysis and its Applications, *Asymptotic behavior of strip mappings of some symmetric strips*, Varna, Bulgaria, May 1985.

- Bulgarian Academy of Sciences, Institute of Mathematics, Presentations in the field of Geometric Function Theory, Sofia, Bulgaria, 1983 – 1988.

Talks by invitation, Mathematics Education

- MfA, Simons Foundation, mini-course in Euclidean Geometry, February-March 2017.

- Hamilton College, Clinton, NY, Undergraduate student seminar, Iterations, *Newton's method and fractals*, February 2002.

- Yale University, New Haven, CT, Workshop in fractal geometry, *On the geometry of the Mandelbrot set, Newton's method for cubic polynomials* - description and students' projects, August 2000.

- Hotchkiss School, Lakeville, CT, June reunion faculty lecture, *Using technology in the classroom to understand new and old mathematics*, June 2000.

- Hotchkiss School, Lakeville, CT, Association of independent schools conference, *Exploring geometry and fractals with the GSP*, April, 1998.

- Yale University, Conference on teaching fractals and dynamical systems, *Newton's method in the complex plane*, December 12 - 13, 1997.

- Hotchkiss School, Lakeville, CT, June reunion faculty lecture, *Fractals and the science of chaos*, June 1997.

- Lock Haven University, PA, Mathematics Department seminar, *Teaching dynamical systems and fractals and using technology in the classroom (TI - 82, Geometer's Sketchpad)* , July 1995.

- Cheshire Academy, Connecticut association for independent schools conference, *Chaos, fractals and dynamical systems*, April, 1994.

- Lock Haven University, Mathematics Department seminar, Lock Haven, PA, *Calculus reform at Harvard*, June 1993.

Conference organizer and Presentations in Mathematics Education

- *Online interactive vs regular textbook approaches to teaching Discrete Math.* Discrete Math Days, Spring 2021, Williams College, April 24, 2021.

- co-organizer of a special session on Mathematicians in Math Education, AMS Eastern sectional meeting, Stony Brook University, March 19 – 20, 2016.

- with Lisa Berger, *Mathematics Teacher Education Programs in the NYC area* AMS Eastern Sectional Meeting, Stony Brook University, March 20, 2016.

- *A picture is worth a thousand explanations*, AMS and MAA Joint Mathematics Meeting, MAA Session on My Favorite Demo: Innovative Strategies for Math instructors, Atlanta, GA, January 2005.

- *Visual and dynamic experience in math*, AMS and MAA Joint Mathematics Meeting, General Contributed Paper Session, Atlanta, GA, January 2005.

Math Education Workshops leader/instructor

- *Looking at Geometry Using Different Lenses*, taught a mini-course, Math for America (M*f*A), March 8, 22, and 29th 2017.

- Summer Institute Math Leadership Program, leader and instructor (equivalent of two graduate courses in math education) sponsored by the New York state center for Scholarship, State of New York Education Department, Wallace Foundation and Fordham University, Peekskill, July 11 – 15, 2005, Fall 2006, Spring 2006.

- RETC (Regional Educational Technology Center), instructor, Fordham University, Geometer's sketchpad workshop, July 21, 2005.

Workshops/Seminars/Courses participant

- *Analysis seminar*, Mathematics Department, Fordham University, 2013 – 2018.

- *Complex Analysis seminar*, CUNY Graduate Center, 2004 – current.

- *Extremal Length Seminar*, CUNY Graduate Center, 2012 – current.

- *Complex Analysis and Dynamics graduate students seminar*, CUNY Graduate Center, 2004.

- Hyperbolic Geometry seminar, CUNY Graduate Center, 2018 – current.

- *Complex Dynamical Systems*, graduate course, taught by S. Zakeri, CUNY Graduate Center, Spring 2008.

- *Topics in Geometry: Hyperbolic Manifolds*, graduate course, taught by A. Basmajian, CUNY Graduate Center, Spring 2008.

- *Exploring Geometry with the Geometer's Sketchpad*, graduate course for mathematics teachers, Key Curriculum Press, Summer 2005.

- *Summer Workshop in Fractal Geometry Part II*, Yale University, August 8 – 10, 2004 (NSF sponsored, organized by B. Mandelbrot and M. Frame.)

- *Summer Workshop in Fractal Geometry*, Yale University, (NSF sponsored, organized by B. Mandelbrot and M. Frame) August 7 – 11, 2000.

- PIMMS Fractal Workshop, Gateway Community College, (NSF sponsored and led by R. Devaney,) July 8 – 14, 2000.

- *Research Program in Dynamical systems*, Cornell University, (NSF sponsored, organized and led by R. Strichartz, J. Hubbard and A. Epstein), June 28 – August 20, 1999.

- *Dynamical Systems Short Course*, Salve Regina University, Newport, RI, (NSF sponsored and led by R. Devaney), June 15 –19, 1997.

- *Enhancement Workshop on Teaching Differential Equation using Dynamical Systems Perspective*, Boston University, (NSF sponsored and led by R. Devaney and P. Blanchard), June 2 - 5, 1996.

- *Workshop on Technology in the Geometry Classroom*, Geometry Center, University of Minnesota, Minneapolis, MN, (NSF sponsored, organized by E. Fabes), June 04 – June 28, 1996.

- *Secondary School Mathematics and Technology Conference.* Philips Exeter, Academy, Attended two courses: A Dynamical Introduction to Fractals, and An Introduction to the Geometer's Sketchpad, June 19 – June 24, 1994.

Consultant, Screener, Editorial Work

- Scarsdale High School, Mathematics Department, consultant, December 2021.

- Solomon Schechter School of Westchester, Mathematics Department, consultant, Jan. – Feb. 2014, Nov. 2017– March 2018.

- Math for America, Simons Foundation, screener for MfA Early Career and Master Teachers program, in June 2017, June 2018, June 2019 and June 2021.

- Harvard Calculus Consortium Project, editorial work, 1993 – 1995.

Biographical Listings

- Who's Who in the World, Marquis Who's Who, 2009-2015.

- Who's Who of American Women, Marquis Who's Who, 2008.

- Who's Who in Science and Engineering, Marquis Who's Who, 2006 – 2007 and 2008–09.

- Top 100 Educators, The International Biographical Centre, Cambridge, England, 2005.

- Who is Who Among American Teachers, Honoring Our Nation's Most Respected Teachers, USA, 2004 and 2005.

- Dictionary of International Biography, 23rd Edition, International Biographical Center, Cambridge, England, 1995.