

William M. Feldman

DATE	September 28, 2026	
CONTACT INFORMATION	Department of Mathematics University of Utah Salt Lake City, UT 84112	<i>E-mail:</i> feldman@math.utah.edu <i>Webpage:</i> www.math.utah.edu/~feldman <i>Office Phone:</i> (801) 581-4279
RESEARCH INTERESTS	Problems of applied mathematics especially involving nonlinear PDE, free boundary problems, homogenization, random media, and calculus of variations.	
ACADEMIC POSITIONS	University of Utah , Salt Lake City, Utah, USA Associate Professor, July 2026-present Assistant Professor, July 2020-June 2026 John E. and Marva M. Warnock Chair for Faculty Development in Mathematics, July 2020-June 2026 Institute for Advanced Study , Princeton, New Jersey, USA Friends of the IAS Member, 2019-2020 The University of Chicago , Chicago, Illinois, USA L. E. Dickson Instructor, 2015-2019 University of California Los Angeles , Los Angeles, California, USA Dissertation Year Fellowship, 2014-2015 Teaching and Research Assistant, 2010-2014	
EDUCATION	University of California Los Angeles , Los Angeles, California, USA Ph.D., Mathematics, June 2015 Advisor: Professor Inwon C. Kim Advanced to Candidacy, Feb 2013 M.A., Mathematics, June 2011 Claremont McKenna College , Claremont, California USA B.A., Mathematics, Physics, May 2010	
RESEARCH GRANTS	◦ National Science Foundation, Division of Mathematical Sciences Continuing Grant DMS-2407235 “Free Boundary Geometry in Heterogeneous Media” (June 2024-June 2027, \$326,219) ◦ National Science Foundation, Division of Mathematical Sciences Continuing Grant DMS-2009286 “Interfaces and Free Boundaries in Heterogeneous Media” (July 2020-June 2023, extended to June 2024 \$163,688)	
HONORS AND AWARDS	Warnock Chair for Faculty Development in Mathematics (University of Utah, July 2020-June 2026) UCLA: Pacific Journal of Mathematics Dissertation Prize (2015), Dissertation Year Fellowship (2014-2015). Claremont McKenna College: graduated Magna Cum Laude, Honors in Mathematics	

and Physics, Phi Beta Kappa, Phi Beta Kappa Graduate Study Award, Best Overall in Mathematics (2010).

PROFESSIONAL SERVICE

- Co-organizer (corresponding) for workshop, “Evolutions of Bernoulli-type free boundary problems”, American Institute of Mathematics Workshop, Caltech, CA, USA, February 2026.
- Co-organizer special session, “Geometric variational problems and applications”, AMS Fall Central Sectional Meeting, St. Louis, MO, October 2025.
- Co-organized the SIAM Northern States Seminar Series (Montana, North Dakota, South Dakota, Utah, and Wyoming) in Spring 2025, involving engagement of graduate students and postdocs: specifically pizza lunch and informal discussion for students/postdocs after the seminar.
- Co-organized special session, “Nonlinear PDE and Free Boundary Problems”, AMS Fall Central Sectional Meeting, Omaha, NE, October 2023.
- NSF-DMS grant reviewer and panelist.
- Co-organized IPAM Workshop “Stochastic Analysis Related to Hamilton-Jacobi PDEs”, Los Angeles, CA, May 2020.
- Peer-reviewer: *Communications in Partial Differential Equations* (CPDE), *Journal of Differential Equations* (JDE), *SIAM Journal on Mathematical Analysis* (SIMA), *Archive for Rational Mechanics and Analysis* (ARMA), *Stochastics and Partial Differential Equations: Analysis and Computations* (SPDE), *Discrete and Continuous Dynamical Systems* (DCDS), *Annales de l’Institut Henri Poincaré*, *Analyse Non Linéaire* (AIHPC), *Interfaces and Free Boundaries* (IFB), *Indiana University Mathematics Journal* (IUMJ), *Annales Henri Lebesgue* (AHL), *Annals of Probability* (AOP), *Communications of the AMS* (Comm AMS), *Journal of Statistical Physics* (JSP), *Analysis and PDE* (APDE), *Communications in Pure and Applied Math* (CPAM), *Duke Mathematical Journal*.
- Instructed short courses at University of Chicago Math REU, “Introductory topics in PDE” in 2017, “Mixing problems in Fluid Mechanics” in 2018, “Understanding PDEs” in 2019.
- Co-organized UCLA Math Department outreach booth at UCLA’s Exploring Your Universe 2013-2014.

DEPARTMENT SERVICE

- PhD committee member (with actual/expected graduation year): Sean Groathouse (2023), Claire Plunkett (2023), Yibo Zhai (2026), Zhonggan Huang (2026, Chair), Yuhao Huang (2027), Zijie Lin (2027), Yinqian Yu (2028), Batuhan Bayir (2028, co-Chair).
- Masters’ committee member (with expected graduation year): Taos Transue (2022), Caleb Albers (2022).
- Graduate Recruitment Committee (June 2025 - present)
- SIAM Department Ambassador, June 2024 - present
- SIAM Student Chapter Faculty Advisor, June 2024 - present
- Applied Math Seminar co-Organizer, Jan 2022-present.
- Qualifying Exams: MATH 6420 (Spring ‘24, Summer ‘25), MATH 6410 (Summer ‘22, Winter ‘23, Winter ‘26), MATH 6210 (Summer ‘25 cancelled exam), MATH 6220 (Spring ‘21, Summer ‘21, Spring ‘22, Summer ‘22, Summer ‘24).
- Thesis Standard Committee, June 2024 - June 2025
- Engineering Math Committee, July 2023 - June 2024
- Mathematics Development Committee, July 2020 - June 2023
- Colloquium Committee, July 2020 - June 2023 (Co-Chair Jan 2022-June 2022)
- Organized working group on “Optimal Transport and Large Deviations Theory” (w/ Farhan Abedin), Spring 2022.

	◦ Organized working group on “Optimal mass transportation” (w/ Raghav Venktraman, Katya Epshteyn, and Braxton Osting), Fall 2024.
POSTDOCTORAL MENTORING	◦ Kerrek Stinson (AY 2024-present) ◦ Farhan Abedin (AY 2021-22, currently Assistant Professor at Lafayette College)
DOCTORAL ADVISING	◦ Zhonggan Huang (University of Utah, PhD 2026, currently Postdoc at Westlake University) ◦ Batuhan Bayir (University of Utah, 4th year PhD student, co-advising with Yekaterina Epshteyn)
DOCTORAL MENTORING	◦ Carson Collins (UCLA, PhD 2026, currently Postdoc at U Chicago) ◦ Zijie Lin (University of Utah, 5th year PhD student, co-mentoring, primary advisor is Braxton Osting)
UNDERGRADUATE AND MASTERS MENTORING	◦ Conrad Morris (Undergraduate research, Summer 2024-Spring 2025, now PhD student at Univ. Alberta) ◦ Guang Yang (Undergraduate Honors Thesis, AY 2022-2023, now Math Masters student at Utah) ◦ Caleb Albers (Masters Advisor, now PhD student at Utah) ◦ Aidan Coppinga (Undergraduate Honors Thesis, AY 2021-2022, now Math PhD student at CMU) ◦ Zhecheng Huang (Masters Thesis, University of Chicago, 2019, PhD Student at Univ. Illinois Chicago) ◦ Mentor for California Teach S-STEM fellowship recipients Kathlynn Ly and Benjamin Kim (UCLA, 2014-2015)
PREPRINTS AND ACCEPTED WORKS	1. Farhan Abedin, William M Feldman, and Kerrek Stinson. <i>Variational properties of Perron’s extremal solutions in the Bernoulli one-phase problem</i>. 2026. arXiv: 2609.14981 [math.AP]. 2. William M Feldman and Inwon C Kim. <i>Solutions of the Bernoulli one-phase problem with a defect</i>. 2026. arXiv: 2609.17066 [math.AP]. 3. Zijie Lin, William M Feldman, and Braxton Osting. <i>A domain decomposition method for the directional contact angle hysteresis interval on doubly periodic rough surfaces</i>. 2026. arXiv: 2609.17811 [math.AP]. 4. Farhan Abedin and William M Feldman. <i>Regularity of two-phase free boundary minimizers in periodic media</i>. May 2025. arXiv: 2505.16757 [math.AP]. 5. Carson Collins and William M Feldman. <i>Rate independent capillary motion on a narrow Wilhelmy plate</i>. 2025. arXiv: 2511.20146 [math.AP]. 6. William M Feldman and Inwon C Kim. <i>The pinning effect of dilute defects</i>. 2025. arXiv: 2512.11152 [math.AP]. 7. Carson Collins and William M Feldman. <i>Minimizing movements solutions for a monotone model of droplet motion</i>. 2024. arXiv: 2408.15984 [math.AP].
PUBLICATIONS	1. William Feldman and Kerrek Stinson. “Compactness for $GSBV^p$ via concentration-compactness”. In: <i>Proc. Amer. Math. Soc.</i> 154.7 (2026), pp. 2965–2981. DOI: 10.1090/proc/17655.

2. William M. Feldman and Zhonggan Huang. “Homogenization of a vertical oscillating Neumann condition”. In: *Arch. Ration. Mech. Anal.* 250.3 (2026), Paper No. 29, 75. DOI: 10.1007/s00205-026-02188-2.
3. William M. Feldman and Zhonggan Huang. “Regularity theory of a gradient degenerate Neumann problem”. In: *Journal de Mathématiques Pures et Appliquées* 209 (2026), p. 103863. ISSN: 0021-7824. DOI: 10.1016/j.matpur.2026.103863.
4. William M. Feldman, Inwon C. Kim, and Norbert Požár. “An obstacle approach to rate-independent droplet evolution”. In: *Forum of Mathematics, Sigma* 14 (2026), e38. DOI: 10.1017/fms.2026.10189.
5. William M. Feldman, Inwon C. Kim, and Norbert Požár. “On the geometry of rate-independent droplet evolution”. In: *Calc. Var. Partial Differential Equations* 65.10 (2026), Paper No. 265. DOI: 10.1007/s00526-026-03426-x.
6. Batuhan Bayir, Yekaterina Epshteyn, and William M Feldman. “Global well-posedness of a nonlinear Fokker-Planck type model of grain growth”. In: *Discrete and Continuous Dynamical Systems* 48 (2025), pp. 404–422. ISSN: 1078-0947. DOI: 10.3934/dcds.2025146.
7. William M Feldman and Norbert Požár. “On convex comparison for exterior Bernoulli problems with discontinuous anisotropy”. In: *Interfaces and Free Boundaries* 27.3 (2025), pp. 459–468. DOI: 10.4171/IFB/525.
8. Farhan Abedin and William M Feldman. “Quantitative convergence of the “bulk” free boundary in an oscillatory obstacle problem”. In: *Interfaces and Free Boundaries* 26.1 (2024), pp. 31–44. DOI: 10.4171/IFB/501.
9. William M Feldman. “Quantitative homogenization of principal Dirichlet eigenvalue shape optimizers”. In: *Communications on Pure and Applied Mathematics* 77.6 (2024), pp. 3026–3079. DOI: 10.1002/cpa.22184.
10. William M Feldman, Inwon C Kim, and Aaron Zeff Palmer. “The sharp interface limit of an Ising game”. In: *ESAIM: Control, Optimisation and Calculus of Variations* 30 (2024), p. 35. DOI: 10.1051/cocv/2024023.
11. William M Feldman. “Large scale regularity of almost minimizers of the one-phase problem in periodic media”. In: *Ars Inveniendi Analytica* (2023), Paper No. 2, 41. DOI: 10.15781/52x3-ja93.
12. William M Feldman and Peter Morfe. “The occurrence of surface tension gradient discontinuities and zero mobility for Allen–Cahn and curvature flows in periodic media”. In: *Interfaces and Free Boundaries* 25.4 (2023), pp. 567–631. DOI: 10.4171/IFB/491.
13. William M Feldman. “Limit shapes of local minimizers for the Alt–Caffarelli energy functional in inhomogeneous media”. In: *Archive for Rational Mechanics and Analysis* 240 (2021), pp. 1255–1322.
14. William M Feldman, Jean-Baptiste Fermanian, and Bruno Ziliotto. “An example of failure of stochastic homogenization for viscous Hamilton–Jacobi equations without convexity”. In: *Journal of Differential Equations* 280 (2021), pp. 464–476.
15. William M Feldman and Charles K Smart. “A free boundary problem with facets”. In: *Archive for Rational Mechanics and Analysis* 232.1 (2019), pp. 389–435.

16. William M Feldman and Yuming Paul Zhang. “Continuity properties for divergence form boundary data homogenization problems”. In: *Analysis & PDE* 12.8 (2019), pp. 1963–2002.
17. William M Feldman. “Stability of Serrin’s problem and dynamic stability of a model for contact angle motion”. In: *SIAM Journal on Mathematical Analysis* 50.3 (2018), pp. 3303–3326.
18. William M Feldman and Inwon C Kim. “Liquid drops on a rough surface”. In: *Communications on Pure and Applied Mathematics* 71.12 (2018), pp. 2429–2499.
19. William M Feldman and Inwon C Kim. “Continuity and discontinuity of the boundary layer tail”. In: *Annales Scientifiques de l’École Normale Supérieure* 50.4 (2017), pp. 1017–1064.
20. William M Feldman and Panagiotis E Souganidis. “Homogenization and non-homogenization of certain non-convex Hamilton–Jacobi equations”. In: *Journal de Mathématiques Pures et Appliquées* 108.5 (2017), pp. 751–782.
21. William M Feldman, Inwon C Kim, and Panagiotis E Souganidis. “Quantitative homogenization of elliptic partial differential equations with random oscillatory boundary data”. In: *Journal de Mathématiques Pures et Appliquées* 103.4 (2015), pp. 958–1002.
22. Giang Tran et al. “An L1 penalty method for general obstacle problems”. In: *SIAM Journal on Applied Mathematics* 75.4 (2015), pp. 1424–1444.
23. William M Feldman. “Homogenization of the oscillating Dirichlet boundary condition in general domains”. In: *Journal de Mathématiques Pures et Appliquées* 101.5 (2014), pp. 599–622.
24. William M Feldman and Inwon C Kim. “Dynamic stability of equilibrium capillary drops”. In: *Archive for Rational Mechanics and Analysis* 211.3 (2014), pp. 819–878.

INVITED

CONFERENCE TALKS

- Regularity Theory for Free Boundary and Geometric Variational Problems VI (Cervia, Italy), June 2026.
- Workshop on “Free boundaries and growth” at the Erwin Schrödinger Institute (ESI), Vienna, Austria, Dec 2025.
- Workshop on Nonlinear PDEs at Research Institute for Mathematical Sciences (RIMS), Kyoto University, Nov 2025.
- Mathematical Congress of the Americas, Special Session on “Free Boundary Problems and Nonlinear PDEs”, July 2025.
- Rocky Mountain Mathematics Consortium Summer School (U of Wyoming), June 2025
- Regularity Theory for Free Boundary and Geometric Variational Problems V (Cervia, Italy), June 2025
- AMS Sectional Meeting (Special Session), Hartford, CT, Apr 2025 (Invitation declined due to availability)
- International conference on Free Boundary Problems: Theory and Application (Special Session), João Pessoa City, Brazil, August 2024 (Invitation declined due to availability)
- BIRS-CMO Workshop “Optimal Transport and Dynamics”, August 2024
- BIRS Workshop “Mathematics of Multiscale and Multiphysics Phenomena in Materials Science”, June 2024
- Simons Collaboration workshop on “Geometry, Disorder, and Delocalization of Eigenfunctions”, MIT, Cambridge, MA, May 16-18 2024

- AMS Sectional Meeting (Special Session), Omaha, NE, Oct 2023
- AMS Sectional Meeting (Special Session), El Paso, TX, Sept 2022
- AMS Sectional Meeting (Special Session), Salt Lake City, UT, October 2020 (Virtual).
- SIAM TXLA Section Annual Meeting (Mini-symposium), Texas A&M University, October 2020 (Virtual)
- FRG concentration period on geometric measure theory and partial differential equations, Seattle, WA, August/September 2020 (Event cancelled due to COVID-19)
- IPAM Workshop “Stochastic Analysis Related to Hamilton-Jacobi PDE”, Los Angeles, CA, May 2020 (Virtual).
- AMS Sectional Meeting (2 Special Sessions), Ann Arbor, MI, October 2018.
- LMS Durham Symposium on Homogenisation in Disordered Media, Durham, UK, August 2018.
- “79/80th Midwest PDE Seminar”, University of Illinois, Chicago, USA, September 2017.
- AMS Sectional Meeting (Special Session), Bloomington, IN, April 2017.
- “78th Midwest PDE Seminar”, Loyola University, Chicago, USA, October 2016.
- Workshop “New Trends in nonlinear PDEs: from theory to applications”, Cardiff, UK, June 2016.
- Banff International Research Institute Workshop “Developments in the Theory of Homogenization”, Banff, Canada, July 2015.
- Institut Mittag-Leffler Long Program “Homogenization and Random Phenomenon”, Stockholm, Sweden, Sept 2014.
- AMS Sectional Meeting (Special Session), Louisville, KY, Oct 2013.

RECENT SEMINAR AND COLLOQUIUM TALKS

- PDE Seminar, Wayne State University, January 20, 2026.
- Analysis Seminar, Yale, November, 2024.
- Analysis Seminar, UCLA, October, 2021.
- Department Colloquium, Florida Institute of Technology, Melbourne, FL, April 2021.
- Rainwater Seminar, University of Washington, Seattle, WA, March 2021.
- Joint Applied / Probability Seminar, Stanford University, Palo Alto, CA, September 2020.

TEACHING EXPERIENCE

University of Utah, Salt Lake City, Utah, USA

Faculty

2020-present

- Math 1210: Calculus I, Fall 2023, Spring 2024.
- Math 1210-090: Calculus I (Online course), Fall 2022, Spring 2023.
- Math 1220: Calculus II, Spring 2026.
- Math 3220: Foundations of Analysis II, Fall 2020 (IVC).
- Math 5210: Introduction to Analysis, Spring 2021 (IVC).
- Math 5500: Calculus of Variations, Spring 2025.
- Math 6210: Real Analysis (Graduate Qualifier), Fall 2025.
- Math 6220: Complex Analysis (Graduate Qualifier), Spring 2022, Spring 2026.
- Math 6410: Ordinary Differential Equations (Graduate Qualifier), Fall 2021, Fall 2024.
- Math 6420: Partial Differential Equations (Graduate Qualifier), Spring 2022, Spring 2024, Spring 2025.

- Math 7875: Graduate Partial Differential Equations II (topics class), Spring 2023.

The University of Chicago, Chicago, Illinois USA

Instructor

2015 - 2019

- Math 200/201: Mathematical Methods for Physical Sciences, Fall 2015, Winter 2016
- Math 203/204/205: Analysis in $\mathbb{R}^n$, Fall 2016, Winter 2017, Fall 2017, Spring 2018
- Math 212: Advanced Numerical Analysis, Fall 2018
- Math 275: Basic Theory of Partial Differential Equations, Spring 2016

University of California Los Angeles, Los Angeles, California USA

Teaching Assistant

2010 - 2014

- Math 266B: Graduate Partial Differential Equations, Winter 2013, 2014
- Math 266A: Graduate Applied Differential Equations (ODEs), Fall 2012
- Math 131C: Topics in Analysis (Measure Theory), Spring 2012
- Math 131A: Analysis, Winter 2012
- Math 151A: Applied Numerical Methods, Fall 2011
- Math 33A: Linear Algebra, Spring 2011
- Math 33B: Differential Equations, Fall 2010 and Winter 2011