

Bohyun Kim | CV

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EDUCATION

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| University of Utah <i>Postdoctoral Fellow, C.R. Wiley Instructor</i> | Salt Lake City, UT <i>Aug. 2023 - current</i> |
| University of California, Los Angeles <i>Ph.D., Mathematics</i> Advisor: Dr. Andrea L. Bertozzi | Los Angeles, CA <i>Sept. 2016 - Jun. 2023</i> |
| University of California, Los Angeles <i>M.A., Mathematics</i> | Los Angeles, CA <i>Dec. 2018</i> |
| University of California, Irvine <i>B.S., Mathematics, Minor in Computer Science</i> | Irvine, CA <i>Sept. 2012 - Jun. 2016</i> |

RESEARCH INTERESTS

My research interests lie in designing numerical methods for nonlinear partial differential equations with applications in fluid mechanics, imaging, graphics, and climate modeling.

PUBLICATIONS

- Kim, B.**, Ji, H., Bertozzi, A., Sadeghpour A., Ju, S. (Accepted, To Appear). A positivity-preserving numerical method for a thin liquid film on a vertical cylindrical fiber. In: *Journal of Computational Physics*.
- Kim, B.** (2023). Theory of Positivity-Preserving Numerical Methods for Thin Viscous Liquids Flowing Down Vertical Fibers PhD thesis, University of California, Los Angeles <https://escholarship.org/content/qt9nf1d3d1/qt9nf1d3d1.pdf>
- Kim, B.**, Lou, Y. (2021). Two-Step Blind Deconvolution of UPC-A Barcode Images. In: Demir, I., Lou, Y., Wang, X., Welker, K. (eds) *Advances in Data Science*. Association for Women in Mathematics Series, vol 26. Springer, Cham. https://doi.org/10.1007/978-3-030-79891-8_3
- Birns, S., **Kim, B.**, Ku, S., and Stangl, K. (2016). A Practical Study of Longitudinal Reference-Based Compressed Sensing for MRI. *Rose-Hulman Undergraduate Mathematics Journal*: Vol. 17 : Iss. 2 , Article 1. <https://doi.org/10.48550/arXiv.1608.04728>

SOFTWARE

1. **Kim, B.** (2023). BEM-thin-liquid-film-code-data. GitHub repository.
<https://github.com/BohyunKim92/BEM-thin-liquid-film-code-data>

AWARDS AND FELLOWSHIP

NSF-RTG in Mathematics, “Optimization and Inversion for the 21st Century Workforce.” partially funded by 3 academic-year fellowship from the University of Utah 2023. NSF DMS # 2136198

Eugene V. Cota-Robles Fellowship: 2 academic-year fellowship in Fall 2016 by UCLA

NRT-MENTOR Fellowship: One year fellowship awarded in Fall 2018 by UCLA Mathematics Department.

Houts Family Scholarship: UC Irvine

RESEARCH PROJECTS

University of California, Los Angeles Los Angeles, CA
Graduate Researcher with Dr. Andrea L. Bertozzi Jan. 2020 - Present

Thesis: A positivity-preserving numerical method for a thin liquid film on a vertical cylindrical fiber

Graduate Researcher with Dr. Yifei Lou Jul. 2019 - Feb. 2020

Two-step Blind Deconvolution of UPC-A Barcode Images

Undergraduate Researcher with Dr. Deanna Needell Jun. 2015 - Aug. 2016

Longitudinal MRI and compressed sensing (Applied and Computational Mathematics REU Program 2015)

University of California, Irvine Irvine, CA
Undergraduate Researcher with Dr. Natalia Komarova Sept. 2013 - Jun. 2016

Mathematical modeling of stem cells and differentiated cells

Undergraduate Researcher with Dr. Yifei Lou Jun. 2013 - Aug. 2013

Barcode Deconvolution via Wiener Filter and Dictionary Analysis (Interdisciplinary Computational and Applied Mathematics Program, iCAMP, 2012)

Mathematical Biosciences Institute Columbus, OH
Undergraduate Researcher with Dr. Yaroslav Molkov Jun. 2014 - Aug. 2014

Mathematical modeling of thermoregulation (Mathematical Bioscience Institute summer REU 2014)

TEACHING EXPERIENCE

University of California, Los Angeles

Los Angeles, CA

Instructor

Jan. 2023 - Apr. 2023

Nominated to teach an upper division math class (Math 182: Algorithms) as a graduate student for the first time in Math department history.

Teaching Assistant

Sept. 2017 - Present

Average Teaching Score of 11 courses taught: 8.078/10

Lower Division: Calculus for life science students, Integral and Infinite series, Calculus of Several Variable, Linear Algebra and Applications, Differential Equations.

Upper Division: Introduction to Probability and Statistics, Applied Numerical Methods.

University of California, Physics

Irvine, CA

Physics Tutor

Mar. 2015 - Jun. 2016

TEACHING TRAINING

1. *Utah Math Teacher Training Workshop Summer 2023* University of Utah, UT, 2023

PRESENTATION (ORAL)

1. *Positivity-preserving numerical method for thin liquids film on vertical cylindrical fibers.* Applied Mathematics Seminar at University of Utah, UT, 2023
2. *Mathematics in Fluid Dynamics: Models, Simulations and Graphics.* Organization for Cultural Diversity in Science (OCDS) Showcase at UCLA, CA, 2023
3. *Positivity-preserving numerical method for thin liquids film on vertical cylindrical fibers.* Open House talk for UCLA new graduate students, CA, 2023
4. *Positivity-preserving numerical method for thin liquids film on vertical cylindrical fibers.* The 74th Annual Meeting of the Division of Fluid Dynamics (DFD), Indianapolis, 2022
5. *Barcode Deconvolution via Wiener Filter and Dictionary Analysis.* MAA Fall Sectional Meetings, Irvine, 2014
6. *Barcode Deconvolution via Wiener Filter and Dictionary Analysis.* Southern California Conferences for Undergraduate Research (SCCUR), Fullerton 2014
7. *Effect of Locomotion on a Body Temperature Control Mechanism.* Indiana University Research Conference, Bloomington 2014

8. *Effect of Locomotion on a Body Temperature Control Mechanism*. Indiana University Research Conference, Bloomington 2014
9. *Effect of Locomotion on Body Temperature Control Mechanism* Mathematical Biosciences Institute REU Capstone Conference, Columbus 2014
10. *The Ultimate Brownie Pan* Pacific Coast Undergraduate Mathematics Conference (PCUMC), Pomona, 2013

PRESENTATION (POSTER)

1. *Positivity-preserving numerical method for thin liquids film on vertical cylindrical fibers*. The 74th Annual Meeting of the Division of Fluid Dynamics (DFD), Indianapolis, 2022
2. *Barcode Deconvolution via Wiener Filter and Dictionary Analysis*. Joint Mathematics Meetings (JMM), San Antonio 2015
3. *Effect of Locomotion on Body Temperature Control Mechanism* Indiana University Research Conference, Bloomington 2014
4. *Effect of Locomotion on Body Temperature Control Mechanism* Mathematical Biosciences Institute REU Capstone Conference, Columbus 2014

SERVICE

Department of Mathematics, UCLA Los Angeles, CA
Teaching Committee - Graduate Student Representative *Sept. 2022 - Present*

Improved and evaluated teaching policies at UCLA mathematics department. The member was elected by graduate students and recommended by faculty members.

Research Mentor for Research Experience for Undergraduate (REU) *Jun. 2019*

Association for Computing Machinery (ACM), UC Irvine Irvine, CA
Logistics Manager of hackUCI, UC Irvine hackathon *Feb. 2014- May. 2016*

Planned and coordinated all event details for 400+ participants, sponsors, and organizers.

OUTREACH

Math Career Fair University of California, Irvine, CA, 2023

Math Major Grad School and Career Panels University of California Irvine, CA, 2023

Advanced Teaching panel UCLA math, CA, 2023

Advanced Teaching panel UCLA math, CA, 2022

Exploring Your Universe (EYU) UCLA math, CA, 2016, 2018

Awareness in Women in Science and Engineering (AWISE) UCLA math, CA, 2016

Math CEO UC Irvine 2014-2016

PROGRAMMING SKILLS

C++, C, Python, MATLAB, Maple, Mathematica, R, Pytorch, Tensor Flow