

# CURRICULUM VITA

**Yulia Hristova**

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## 1. Education

**Ph.D. – Mathematics** **August 2010**  
Texas A&M University, College Station, TX  
Advisor: Dr. Peter Kuchment

**B.S. – Mathematics** **June 2002**  
Sofia University “St. Kliment Ohridski”, Sofia, Bulgaria

## 2. Teaching and Research Interests

1. Applied inverse problems and imaging
2. Numerical analysis and partial differential equations
3. Reconfiguration graphs

## 3. Employment History

**Associate Professor** **May 2019 - present**  
Department of Mathematics and Statistics  
University of Michigan - Dearborn, Dearborn, Michigan

**Assistant Professor** **September 2012 to May 2019**  
Department of Mathematics and Statistics  
University of Michigan - Dearborn, Dearborn, Michigan

**Postdoctoral Associate** **September 2010 to August 2012**  
Institute for Mathematics and Its Applications  
University of Minnesota, Minneapolis, Minnesota

## 6. Scientific and Professional Societies Memberships

Association for Women in Mathematics (AWM) (Member)

## 4. Teaching Activities

### a) Chronology of Teaching Assignments at the University of Michigan Dearborn for Past 6 Years.

Term	Course Number	Course Title	Cr. Hrs	Num. of Students
	MATH 116-009	Calculus II	4	31
	MATH 514-001	Finite Difference Methods for Diff. Equations	3	26
W'16	MATH 205-002	Calculus III for Engineers	3	31
	MATH 455/555-001	Complex Variables with Applications	3	14
S'16	MATH 205-101	Calculus III for Engineers	3	14
	MATH 462/562-101	Mathematical Modeling	1	16
F'16	MATH 115-007	Calculus I	4	32
	MATH 454/554-001	Fourier Series and Boundary Value Problems	3	9
W'17	MATH 116-005	Calculus II	4	32
	ECE/MATH 276-001	Discrete Mathematical Methods in Computer Engineering	4	30
S'17	MATH 205-101	Calculus III for Engineers	3	24
F'17	MATH 115-010	Calculus I	4	34
	MATH 462/562-001	Mathematical Modeling	3	31
W'18	MATH 116-003	Calculus II	4	32
	MATH 116-005	Calculus II	4	32
	ECE/MATH 276-001	Discrete Mathematical Methods in Computer Engineering	4	32
S'18	MATH 215-101	Calculus III	4	34
F'18	MATH 276-001	Discrete Mathematical Methods in Computer Engineering	4	29
	MATH 276-002	Discrete Mathematical Methods in Computer Engineering	4	33
	MATH 454/554-001	Fourier Series and Boundary Value Problems	3	18
W'19	MATH 228-003	Differential Equations with Linear Algebra	4	28
	ECE/MATH 276-001	Discrete Mathematical Methods in Computer Engineering	4	34
S'19	ECE/MATH 276-101	Discrete Mathematical Methods in Computer Engineering	4	29
F'19	MATH 276-002	Discrete Mathematical Methods in Computer Engineering	4	33
	MATH 228-002	Differential Equations with Linear Algebra	4	28
	MATH 228-004	Differential Equations with Linear Algebra	4	28
W'20	MATH 455/555-001	Complex Variables	3	20
F'20	MATH 115-012	Calculus I	4	31
	MATH 116-008	Calculus II	4	27

## c) Graduate/Undergraduate Student Supervision

### M.S. Students

- [1] Kaufmann, C., "A mathematical model to better understand the use of antibiotics in a Honeybee colony infected with *Nosema ceranae*", MS in ACM, May 2020.
- [2] Hayes, N., "Numerical Methods and Noise in a Filtered Back Projection-Type Reconstruction Method for Thermoacoustic and Photoacoustic Tomography," MS in ACM, May 2019.
- [3] Like, D., "X-ray Tomography and Associated Applications," MS in ACM, May 2019.

### Undergraduate Research Projects

- [4] Baker, N., Flynn, J. and Mousley, J., "Phase Retrieval with Applications to Optical Microscopy", Summer 2021, co-mentor with Viswanathan, A.
- [5] Hamka, M., Hutchison, B. and Liveoak, D., "Mathematics of Phaseless Imaging", Winter 2021, co-mentor with Viswanathan, A.
- [6] Williams, B. and Cordor, C., "Mathematics of Phaseless Imaging", Summer 2019, co-mentor with Viswanathan, A.
- [7] Wendl, D., Bratto, N. and Hanek, A., "Frequency response of blood flow autoregulation", Winter 2016, co-mentor with Kim, H.
- [8] Burnham, P., Cele, D., Kim, H., Moon, T., "Modeling the Dynamics of Coupled Laser Cavities", MAXIMA REU, University of Minnesota, MN, mentor, Summer 2012.

### Service on Thesis Committees

- [9] Song, T, "Signal Processing in Human-Computer Interface," MS in CIS, April 2017.

## d) Other Teaching Experiences

- [1] Inquiry Based Learning (IBL) training, University of Michigan, Ann Arbor, August, 2017.
- [2] Co-mentoring students in Math 390 "Preparation for industrial Careers", in Winter 2015 and Winter 2016.

## 5. Research Activities

### A. Publications

#### b) Papers Published or Accepted for Publication in Refereed Journals

- [1] Kim, J., Moon, S. and **Hristova, Y.**, "Photoacoustic tomography with line detector: Exact inversion formula," *Journal of Mathematical Analysis and Applications*, Volume 500, no. 2, 125119, 2021.
- [2] Asplund, J., Edoh, K., Haas, R., **Hristova, Y.**, Novick, B., Werner, B., "Reconfiguration graphs of shortest paths," *Discrete Mathematics*, Vol 341, no. 10, 2018, pp. 2938-2948.
- [3] Moon, S., **Hristova, Y.**, Kwon, B., "Single Scattering Tomography with Curved Detectors", *Biomedical Physics and Engineering Express*, Vol 4, no. 4, 045040, 2018.

- [4] Dong, B., Gottlieb, B., **Hristova, Y.**, Jiang, Y., and Wang, H., "The effect of the sensitivity parameter in weighted essentially non-oscillatory methods," In S. Brenner (Ed.), *Topics in Numerical Partial Differential Equations and Scientific Computing*, The IMA Volumes in Mathematics and its Applications, vol. 160, Springer New York, 2016, pp. 23-50.
- [5] Olson A., Ciabatti A., **Hristova Y.**, Kuchment P., Ragusa J. and Allmaras M., "Passive detection of small low-emission sources - two-dimensional numerical case studies," *Nuclear Science and Engineering*, Vol 184, no. 1, 2016, pp. 125-150.
- [6] **Hristova Y.** and Zeytuncu Y., "Why do we need the derivative for the surface area?" *PRIMUS*, 2015, DOI: 10.1080/10511970.2015.1095263.
- [7] **Hristova Y.**, Moon S. and Steinhauer D., "A Radon-type transform arising in Photoacoustic Tomography with circular detectors: spherical geometry," *Inverse Problems in Science and Engineering*, 2015, DOI:10.1080/17415977.2015.1088537.
- [8] **Hristova Y.**, "Inversion of the V-line transform arising in emission tomography," *Journal of Coupled Systems and Multiscale Dynamics*, Vol 3, no. 3, 2015, pp. 272-277.
- [9] Allmaras, M., Darrow, D., **Hristova, Y.**, Kanschat, G. and Kuchment, P. "Detecting small low emission radiating sources," *Inverse Problems and Imaging*, Vol 7, no. 1, 2013, pp. 47-79.
- [10] **Hristova, Y.**, "Time reversal in thermoacoustic tomography - an error estimate, " *Inverse Problems* 25 (2009) 055008 (14pp).
- [11] **Hristova, Y.**, Kuchment P. and Nguyen, L., "Reconstruction and time reversal in thermoacoustic tomography in acoustically homogeneous and inhomogeneous media," *Inverse Problems* 24 (2008) 055006 (25pp).

## e) Conference Proceedings

### Refereed by Paper

- [12] Cordor\*, C., Williams\*, B., **Hristova, Y.** and Viswanathan, A., "Fast 2D Phase Retrieval using Bandlimited Masks," Proceedings of the 28th European Signal Processing Conference (EUSIPCO), pp. 980-984, 2021, January, Amsterdam, Netherlands. \*Undergraduate students

## B. Research Grants

### a) Awarded Research Grants

- [1] "Collaborative Research: RUI: Computational Ptychography: Fast Algorithms, Recovery Guarantees, and Applications to Bio-Imaging," \$165,904 (U of M - Dearborn share), Viswanathan, A. (PI), Hristova, Y. and Zheng, G. (Co-PIs), National Science Foundation (Computational Mathematics program), 2020-2023.

### b) Awarded Instructional, Software and Equipment Grants

- [2] "Mathematical Sciences Sponsorship Fund," \$4,000, Hristova (PI), Y., Elsevier, 2020.
- [3] "OER Remixing Grant," \$1,500, Dabkowski, M. and Hristova, Y., University of Michigan-Dearborn, 2019.
- [4] "PIC Math" teaching grant, \$3,000, Kim, H. (PI), Agarwal, M. and Hristova, Y., (Co-PIs), Mathematical Association of America, 2015-2016.
- [5] "PIC Math" teaching grant, \$5,000, Hristova, Y. (PI), Kim, H. (Co-PI), Mathematical Association of America, 2014-2015.

## 6. Outreach

GirlsGetMath@Dearborn, organizer	26-30/07/2021
Maize and Blue Math Circle, leader of multiple sessions	2014 – present
Served on the MAA/AMC Contest Panel for AMC8	2016
Organizer of IMA outreach activities (Minnesota State Fair, Annual CSE Alumni Homecoming Celebration, Math and Science Family Fun Fair)	2011

## 7. Service Activities

### a) University Service

#### Campus-wide Committees

Faculty Senate (F 2019, F 2020, F 2021 - W 2022)

- Senate committee on updating the Academic Code of Conduct policy, F 2020 (chair)

Faculty Senate alternate (F 2018 - W 2019)

#### Departmental Committees

M.S. in ACM Program (Director) (S 2019 - S 2020)

LEO I/II Review Committee (F 2018 - F 2020)

Mathematics Majors Advising (F 2016 - S 2019)

ACM Admissions Committee (W 2016 to W 2019, F 2020 - present)

ACM Scholarship Committee (F 2015 to present)

Library Liaison (F 2015 to present)

Al Turfe Distinguished Lecture Series (W 2015 to F 2018)

Departmental Website Committee & Content Editor (F 2012 to present)

Mathematics Search Committee (F 2016 - W 2017 )

Departmental Executive Committee (W - S 2016)

Calculus Sequence Committee (F 2015 to W 2017)

PME Faculty Advisor (F 2014 to F 2016)

Applied Mathematics Search Committee (F 2013 - W 2014)

Classroom Observation Policy Task Force (F 2012 to F 2013)

### b) Professional Activities

#### Sessions/Conferences Organized and /or Chaired

1. Organizer (with A. Viswanathan ) Mathematics of Signal Processing, Optimization and Inverse problems", 2018 SIAM Annual Meeting, Portland, OR, July 13, 2018.
2. Organizer (with H. Kim, F. Massey, J. Remski, J. Zhao), Great Lakes SIAM Spring Meeting, University of Michigan - Dearborn, Dearborn, MI, April 1, 2016.
3. Organizer (with L. Nguyen), Special Session "Inverse Problems and Imaging", Central Spring Sectional Meeting Michigan State University, East Lansing, MI, March 14-15, 2015.

### c) Technical Reviews

#### Papers for the Following Journals

Computers and Mathematics with Applications, Inverse Problems, Journal of Mathematical Imaging and Vision , Inverse Problems and Imaging , SIAM Journal on Imaging Sciences

**d) Other Services**

1. Faculty advisor for AWM student chapter at UM-Dearborn, F 2021 - present.
2. Organized Pi Mu Epsilon induction ceremony (F 2014).
3. Volunteer for the “Abuse Hurts” program at UM-Dearborn (F 2014)
4. Participated in the UM-D Open House 2012, 2013, 2016.