ZHAO YANG

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Zhongguancun East Road No.55, Haidian, Beijing China

EMPLOYMENT

Academy of Mathematics and Systems Science CAS, China

– Associate Professor (with tenure-track) *08/2022-current*

University of Illinois Urbana-Champaign, USA

– J. L. Doob Research Assistant Professor *08/2019-08/2022*
Mentors: Professors Vera Hur and Jared Bronski

EDUCATION

Indiana University, Bloomington, USA

– Doctor of Philosophy, Mathematics *08/2013-05/2019*
Advisor: Professor Kevin Zumbrun
Thesis: Traveling waves in an inclined channel and their stability
College of Arts and Sciences Dissertation Research Fellowship (*2018-2019)*

– Master of Science, Applied Statistics *08/2016-05/2018*

Fudan University, Shanghai, China

– Bachelor of Science, Mathematics and Applied Mathematics *09/2009-06/2013*

INTERESTS

Nonlinear Partial Differential Equations

– traveling waves and their stability; application to fluid dynamics.

– hyperbolic system of balance laws; free surface water wave equations.

– rigorous analysis; Evans functions; pointwise Green function estimates; Floquet theory.

PUBLICATIONS

8. G. Faye, L. M. Rodrigues, **Z. Yang**, and K. Zumbrun, Existence and stability of nonmonotone hydraulic shocks for the Saint Venant equations of inclined thin-film flow, **Arch. Ration. Mech. Anal.** to appear, arXiv: 2307.10657. Link

7. V. Hur and **Z. Yang**, *Unstable Stokes waves*, **Arch. Ration. Mech. Anal.**, 247, 62 (2023). Link

6. L. M. Rodrigues, **Z. Yang** and K. Zumbrun, *Convective-wave solutions of the Richard-Gavrilyuk model for inclined shallow water flow*, **Water Waves** (2023).Link

5. S. Jung, **Z. Yang**, and K. Zumbrun, *Stability of strong detonation waves for Majda's model with general ignition functions*, **Quart. Appl. Math.**, 79, 357-365, (2021). Link

4. A. Sukhtayev, **Z. Yang**, and K. Zumbrun, *Spectral stabilty of hydraulic shock profiles*, **Phys. D**, 405, 132360 (2020). Link

3. **Z. Yang** and K. Zumbrun, *Stability of hydraulic shock profiles*, **Arch. Ration. Mech. Anal.**, 235, 195-285 (2020). Link

2. **Z. Yang** and K. Zumbrun, *Convergence as period goes to infinity of spectra of periodic traveling waves toward essential spectra of a homoclinic limit*, **J. Math. Pures Appl.**, 132, 27-40, (2019). Link

1. M. Johnson, P. Noble, L. M. Rodrigues, **Z. Yang**, and K. Zumbrun, *Spectral stability of inviscid roll-waves*, **Comm. Math. Phys.**, 367, 265-316 (2019). Link

PREPRINTS

4. V. Hur and **Z. Yang**, Unstable capillary-gravity waves, arXiv: 2311.01368. Link

3. **Z. Yang** and K. Zumbrun, Multidimensional stability and transverse bifurcation of hydraulic shocks and roll waves in open channel flow, arXiv: 2309.08870. Link

2. B. Braker, J. Bronski, V. Hur, and **Z. Yang**, *Asymptotic stability of sharp fronts: Analysis and rigorous computation*, preprint, arXiv:2112.04700. Link

1. **Z. Yang**, *An alternative proof of modulation instability of Stokes waves in deep water*, preprint, arXiv:2109.12101. Link

AWARDS AND PRIZES

Oct. 2021	Bhatnagar Award for Outstanding Thesis in Applied Mathematics
April 2019	Outstanding Thesis Award
2018-2019	College of Arts and Sciences Dissertation Research Fellowship
2018, Summer	Hazel King Thompson Summer Reading Fellowship
2018, Spring	Spring Semester Research Assistantship
2017, Summer	Hazel King Thompson Summer Reading Fellowship
April 2017	Schober Travel Award
April 2017	Graduate Student Travel Award
2013-2018	Full support for Math Phd program
2010-2012	People's Scholarship
2011, 2012	Major Scholarship
Dec. 2010	National College Students' Physical Competition **1st Prize**
2010, 2011	Selected in Top-notch Talent Plan of China
Sept. 2008	Chinese Physics Olympiad (CPhO) **1st Prize**
Dec. 2005	National Olympiad in Informatics in Provinces (NOIP) **1st Prize**

ACADEMIC VISITS

May. 29 - June. 7, 2024	Short term visitor, University of Rennes 1, France
Jun. 14 - Jul. 12, 2023	Short term visitor, University of Rennes 1, France
Mar. 6 -Mar. 20, 2022	Indiana University Bloomington, America
Jan. 26 - Mar. 07, 2018	Summer Program at IMPA, Rio de Janeiro, Brazil

INVITED TALKS

Jul. 15-18, 2024	Compressible Fluids and Related Problems, Tianyuan Mathematics Research Center, Kunming
Jun. 24-27, 2024	SIAM Conference on Nonlinear Waves and Coherent Structures, Baltimore
Jun. 10-14, 2024	Equadiff 2024, Karlstad University
Nov. 25, 2023	Beijing Mathematical Society 2023 annual meeting, Beijing
May 12-15, 2023	The 10th Youth Academic Forum on PDEs, Xi'an

May 5, 2023	AMSS colloquium, Beijing
Nov. 17-20, 2022	CSIAM2022, Guangzhou (online)
Oct. 26-28, 2022	The Eighth Japan-China workshop, Beijing (online)
Mar. 29-Apr. 1 2022	Waves2022, Athens
Jan. 13, 2022	PDE seminar, BYU (online)
Oct. 9-10, 2021	AMS sectional meeting, Omaha (online)
Feb. 12, 2021	PDE seminar, Brown (online)
Feb. 17, 2021	PDE seminar, IU
Nov. 30, 2020	PDE seminar, IU
Apr. 22, 2019	PDE seminar, IU
Jan. 29, 2019	HADES seminar, UIUC
Oct. 29, 2018	PDE seminar, IU
Jul. 12, 2018	SIAM annual meeting, Portland

TEACHING AND GRADING

University of Illinois Urbana-Champaign

2022, Spring	M444 *Elementary Real Analysis*, instructor
	M447 *Real Variables*, instructor
2021, Fall	M285 *Introduction to Differential Equations*, instructor
2021, Summer	M446 *Applied Complex Variables*, instructor
2021, Spring	M553 *Partial Differential Equations*, instructor
	M444 *Elementary Real Analysis*, instructor
2020, Fall	M558 *Methods of Applied Mathematics*, instructor
2020, Summer	M416 *Abstract Linear Algebra*, instructor
2020, Spring	M285 *Introduction to Differential Equations*, instructor (two sessions)
2019, Fall	M416 *Abstract Linear Algebra*, instructor

Indiana University Bloomington

2017, Fall	M311 *Calculus III*, recitation
2017, Spring	M371 *Elementary Computational Method*, grading
	M540 *Partial Differential Equations I*, grading
2016, Fall	M413 *Introduction to Analysis I*, grading
	M471 *Numerical Analysis I*, grading
2016, Summer	M211 *Calculus I*, recitation
2016, Spring	M211 *Calculus I*, recitation (two sessions)
2015, Fall	M212 *Calculus II*, recitation (two sessions)
	M119 *Brief Survey of Calculus I*, instructor
2015, Summer	
2015, Spring	M211 *Calculus I*, recitation (two sessions)
2014, Fall	M413 *Introduction to Analysis I*, grading (two sessions)
2014, Spring	M415 *Elementary Complex Variables with Applications*, grading
	S343 *Honor Introduction to Differential Equation*, grading
2013, Fall	M303 *Linear Algebra for Undergraduates*, grading (two sessions)