ZHAO YANG

Email: yangzhao@amss.ac.cn
Zhongguancun East Road No.55, Haidian, Beijing China

EMPLOYMENT

Academy of Mathematics and Systems Science CAS, China *08/2022-current*

- assistant professor

University of Illinois Urbana-Champaign, USA *08/2019-08/2022*

- J.L Doob research assistant professor
  Mentors: Professors Vera Hur and Jared Bronski

EDUCATION

Indiana University, Bloomington, USA

- Doctor of Philosophy, Mathematics *08/2013-05/2019*
  Advisor: Prof. 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 *09/2009-06/2013*

- Bachelor of Science, Mathematics and Applied Mathematics

INTERESTS

Nonlinear Partial Differential Equations:

- traveling waves and their stability; application to fluid dynamics, combustion, and detonation.
- hyperbolic system of balance laws; free surface water wave equations.
- rigorous analysis; analytical and numerical verification of stability conditions; numerical simulations of wave phenomena; computer-assisted proof.
- software: Matlab, Clawpack, Python; parallel computing; batch jobs.

PUBLICATIONS

1. M. Johnson, P. Noble, L. M. Rodrigues, Z. Yang, and K. Zumbrun, *Spectral stability of inviscid roll-waves*, Commun. Math. Phys. 367, 265-316 (2019). 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*, Journal de Mathématiques Pures et Appliquées, 132, 27-40, (2019). Link
3. Z. Yang and K. Zumbrun, *Stability of hydraulic shock profiles*, Arch Rational Mech Anal, 235, 195-285 (2020). Link
4. A. Sukhtayev, Z. Yang, and K. Zumbrun, *Spectral stabilty of hydraulic shock profiles*, Physica D: Nonlinear Phenomena, 405, 132360 (2020). 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
6. V. Hur and Z. Yang, *Unstable Stokes waves*, preprint, arXiv:2010.10766. Link
7. Z. Yang, *An alternative proof of modulation instability of Stokes waves in deep water*, preprint, arXiv:2109.12101. Link
8. B. Braker, J. Bronski, V. Hur, and Z. Yang, *Asymptotic stability of sharp fronts. I One bound state implies stability*, preprint, arXiv:2112.04700. Link
9. V. Hur and Z. Yang, *Unstable gravity-capillary waves*, preprint. Link to appear

CURRENT WORK

1. Z. Yang and K. Zumbrun, *Phase-asymptotic stability of Lax or undercompressive viscous shock waves under $L^1 \cap H^3$ perturbations*, in preparation.
2. M. Johnson, L. M. Rodrigues, Z. Yang, and K. Zumbrun, *Stability of roll-waves in the presence of vorticity*, in preparation.
3. Z. Yang and K. Zumbrun, *Existence and Stability of hydraulic shock profiles of Richard-Gavrilyuk Model*, in preparation.
4. L. M. Rodrigues, Z. Yang, and K. Zumbrun, *Convective-wave solutions of the Richard-Gavrilyuk model for inclined shallow water flow*, in preparation.
5. D. Marchesin, A. Mailybaev, Z. Yang, and K. Zumbrun, *Stability of degenerate traveling waves of 2×2 balance system*, in preparation.
6. T-Y. Xiao, V. Hur, and Z. Yang, *Unstable Stokes waves with constant vorticity*, in preparation.

INVITED TALKS

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
April 22, 2019	PDE seminar, IU
Jan. 29, 2019	HADES seminar, UIUC
Oct. 29, 2018	PDE seminar, IU
July 12, 2018	SIAM annual meeting, Portland

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
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)
2015, Summer	M119	*Brief Survey of Calculus I*, instructor
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)