Fanze Kong

CONTACT INFORMATION	Department of Applied Mathematics University of Washington Lewis Hall #201, Seattle Washington, 98195, United States *E-mail:* fzkong@uw.edu

RESEARCH INTERESTS

Analysis of Partial Differential Equations, Applied Mathematics, Reaction-diffusion Systems, Math Biology, Pattern Formation, Mean-field Games

EDUCATION

Southwestern University of Finance and Economics (SWUFE), Chengdu, China

M.Sc. in Mathematics (Thesis Advisor: Professor Qi Wang),	Sept. 2018 – Jul. 2021
B.Sc. in Mathematics, B.Sc. in Economics (Dual Degree),	Sept. 2014 – Jul. 2018

University of British Columbia (UBC), Vancouver, Canada

Ph.D. in Mathematics (Supervisors: Professors Juncheng Wei and Michael Ward), Sept. 2021 – Aug. 2024
Thesis: Global well-posedness and localized patterns of several reaction-diffusion systems involving advection

PROFESSIONAL EXPERIENCE

Pearson Fellow in Department of Applied Mathematics, University of Washington, Sept. 2024 –present

HONORS AND AWARDS

• **Graduate Research Award**, UBC,	2023
• President's Academic Excellence Initiative PhD Award,	2021-2023
• Four Year Fellowship For PHD Students, UBC,	2021-2024
• Graduate Outstanding Thesis Award, SWUFE,	2020-2021
• Scholarship for Academic Merit, SWUFE,	2018-2021
• National Scholarship for Postgraduates, Chinese Ministry of Education,	2018-2019

PREPRINTS & PUBLICATIONS

- *Existence and blow-up profiles of ground states in second order multi-population mean-field games systems*, preprint, **https://personal.math.ubc.ca**, (2024), joint with J. Wei and X. Zeng.

- *Critical mass phenomena and blow-up behavior of ground states in stationary second order mean-Field Games systems with decreasing cost*, preprint, **https://arxiv.org/abs/2405.05484**, (2024), joint with M. Cirant, J. Wei and X. Zeng.

- *Existence, stability and slow dynamics of spikes in a 1D minimal Keller-Segel model with logistic growth*, **J. Nonlinear Sci.**, Vol. 34, No. 3, pp. 51 (2024), joint with M. Ward and J. Wei.

- *Global existence and aggregation of chemotaxis-fluid systems in dimension two*, **J. Differential Equations**, Vol. 400, pp. 1-89 (2024), joint with C. Lai and J. Wei.

- *Global and exponential stabilization of morphogenesis models with logarithmic sensitivity and linear degradation*, **Discrete Contin. Dyn. Syst. Ser. A**, Vol. 44, No. 2, pp. 552-568 (2024), joint with L. Chen and Q. Wang.

- *Existence of multi-spikes in the Keller–Segel model with logistic growth*, **Math. Models Methods Appl. Sci.**, Vol. 33, No. 11, pp. 2227–2270 (2023), joint with J. Wei and L. Xu.

- *Existence and stability of localized patterns in the population models with large advection and strong Allee effect*, **SIAM J. Math. Anal.**, Vol. 55, No. 4, pp. 2505–2552, (2023), joint with J. Wei.

- *The existence and stability of spikes in the one-dimensional Keller–Segel model with logistic growth*, **J. Math. Biol.**, Vol. 86, No. 1, pp. No. 6, (2022), joint with J. Wei and L. Xu.

- *Stability, free energy and dynamics of multi-spikes in the minimal Keller-Segel model*, **Discrete Contin. Dyn. Syst. Ser. A**, Vol. 42, No. 5, pp. 2499-2523, (2022), joint with Q. Wang.

- *Global and exponential attractor of the repulsive Keller-Segel model with logarithmic sensitivity*, **European J. Appl. Math.**, Vol. 32, No. 4, pp. 599-617, (2021), joint with L. Chen and Q. Wang.

- *Stationary ring and concentric-ring solutions of the Keller-Segel model with quadratic diffusion*, **SIAM J. Math. Anal.**, Vol. 52, No. 5, pp. 4565-4615, (2020), joint with L. Chen and Q. Wang.

CONFERENCES & SEMINARS	• Co-organizer and speaker, Special Session of CAIMS Annual meeting *Minisymposium: Pattern formation for novel reaction-diffusion systems in the fully nonlinear regime,* Sept. 2024
	• Speaker, NYU Abu Dhabi SITE Seminar, May 2024
	• Speaker, UBC Department Colloquium, May 2024
	• Speaker, OSU PDE Seminar, Oct. 2023
	• Speaker, UBC PDE Seminar, Sept. 2023
	• Speaker, UBC Math Biology Seminar, Sept. 2023
	• Speaker, UBC Math Biology Seminar, Mar. 2023
	• Speaker, UBC Graduate Student Seminar, Nov. 2022
	• Local Organizer, 2019 TIANFU International Conference on PDEs, Jul. 2019
	• Local Organizer, 2017 TIANFU International Conference on PDEs, Jun. 2017

PROFESSIONAL EXPERIENCE	• Instructor, Vector Calculus and Complex Variables (AMATH 401/501), Autumn , 2024
	• Teaching Assistant, Green's Functions and Variational Methods (MATH 401), Winter 2, 2023
	• Instructor, Differential Calculus with Applications (MATH 100), Winter 1, 2023
	• Teaching Assistant, Applied Partial Differential Equations (MATH 400), Winter 2, 2022
	• Teaching Assistant, Applied Partial Differential Equations (MATH 400), Winter 1, 2022
	• Teaching Assistant, Applied Analysis (MATH 301), Winter 2, 2021
	• Teaching Assistant, Elementary Differential Equations I (MATH 215), Winter 1, 2021

SERVICES	Mathematical Review's reviewer **Referees:** CPAA, La Matematica.

COMPUTER & LANGUAGE SKILLS	• MATLAB, MATHEMATICA, COMSOL, FLEXPDE, LaTeX; • English (fluent), Chinese (native)