Giao Ky DUONG

Curriculum Vitae

PERSONAL DETAILS

Birth	November 20, 1991
Address	No 279, Nguyen Tri Phuong street, 5th ward, 10th district, Ho Chi Minh city, Vietnam
Phone	+84(0) 8350 301 141
Mail	`kydg@ueh.edu.vn`
Nationality	Vietnamese
Languages	English (fluently) French (fluently)
Personal website	duonggiaoky.github.io

EDUCATION

B. S 2009-2013

An Giang University - Vietnam National University Ho Chi Minh City

- Mathematics Teacher Education
- Supervisor: **Thanh Tai VO**, An Giang University - Vietnam National University Ho Chi Minh City

M. S 2014-2016

Institute of Mathematics of Vietnam and Sorbonne Paris Nord University

- Master I (2014-2015): International Master Program at Institute of Mathematics of Vietnam
- Master II (2015-2016): Mathematical Physics and Partial Differential Equations, LAGA, Galilée Institute
- Supervisor: Professor **Hatem ZAAG** at Sorbonne Paris Nord University

Ph. D 2016 - 2019

Sorbonne Paris Nord University

- Speciality: Analysis of Partial Differential Equations
- Supervisor: **Hatem ZAAG**

Post-Doc 2019- 2021

New York University in Abu Dhabi

- Speciality: Analysis of Partial Differential Equations
- Supervisor: **Tej-Eddine GHOUL**

Post-Doc 2023 - 2025

Department of Mathematics, Ludwig Maximilian University of Munich

- Speciality: Mathematical Physics
- Supervisor: **Phan Thành Nam**

TEACHING EXPERIENCE

Student monitoring 2017-2019
Sorbonne Paris Nord University

Lecturer 2013-31.10.202
Department of Mathematics, Faculty of Education, An Giang University - Vietnam National University - Ho Chi Minh City

Researcher 01.11.202 - present
Institute of Applied Mathematics, University of Economics Ho Chi Minh City

RESEARCHS AND PUBLICATIONS

(i) Researchs

- B. S scientific research, 2012:

Theory and applications of Fourier series

- B. S thesis, 2013:

Riemann - Stieltjes integral and applications

- M. S thesis, 2016:

The blowup profile for semi-linear heat equations

- Ph. D thesis:

Finite time singularity formations for non symmetric or non variational partial differential equations

- Research areas: Finite time singularity formation of Nonlinear Partial Differential Equations to obtain a qualitative description of singularity formation of the solutions and the stability of these dynamics. Lieb-Thiring inequality.
  - Blowup phenomenon for non-linear heat equation, Complex Ginzburg-Landau equations in superconductivity theory, and non-local models arising from real problems such as Gierer Meinhardt system and its Shadow limit model, Fisher Kpp Type Model.
  - Quenching phenomenon for MEMS (Micro-Electromechanical System) devices;
  - Singular formation to Inviscid SQG (Surface Quasi-Geostrophic) equation

(ii) Publications

[1] G. K. Duong and V. T. Nguyen and H. Zaag. Construction of a stable blowup solution with a prescribed behavior for a non-scaling invariant semi-linear heat equation, *Tunisian J. Math*, No. 1. p 13-45, 2019, doi: 10.2140/tunis.2019.1.13.

[2] G. K. Duong. Profile for the imaginary part of a blowup solution for a complex-valued seminar heat equation, *J. Funct. Anal*, 277, no. 5, 1531–1579, 2019, doi:10.1016/j.jfa.2019.05.009.

[3] G. K. Duong. A blowup solution of a complex semi-linear heat equation with an irrational power, *J. Differential Equations*, 267, no. 9, 4975–5048, 2019, doi: 10.1016/j.jde.2019.05.024.

[4] G. K. Duong and H. Zaag. Profile of touch-down solution to a nonlocal MEMS model. *Math. Models Methods Appl. Sci.* 29, no. 7, 1279–1348, 2019, doi: 10.1142/S0218202519500222.

[5] G. K Duong and N. Nouaili and Hatem Zaag. Construction of blowup solutions for the Complex Ginzburg-Landau equation with critical parameters, *Memoirs of the American Mathematical Society*, 285, no. 1411, 2023, doi:10.1090/memo/1411.

[6] G. K. Duong and N. I. Kavallaris and H. Zaag. Diffusion-induced blowup solutions for the shadow limit model of a singular Gierer-Meinhardt system. Mathematical Models and Methods in Applied Sciences, 31(07), pp. 1469 - 1503, 2021, doi: 10.1142/S0218202521500305.

[7] G. K. Duong and N. Nouaili and H. Zaag. Refined asymptotic for the blow-up solution of the Complex Ginzburg-Landauequation in the subcritical case, Annales de l'Institut Henri Poincaré C, Analyse Non Linéaire, 39 (1), pp. 41-85, 2022, doi: 10.4171/AIHPC/2.

[8] G. K. Duong, T. E. Ghoul, N. I. Kavallaris and H. Zaag. Blowup solutions for the shadow limit model of singular Gierer-Meinhardt system with critical parameters. *Journal of Differential Equations*, vol 336 pp 73–125, 2022. doi.org/10.1016/j.jde.2022.07.010.

[9] G. K. Duong, V. T. La and T. T. Hoang. Existence, uniqueness and asymptotic behavior of solutions to two-term fractional differential equations. *Communications in Nonlinear Science and Numerical Simulation*, vol 115, 106751, 2022, doi/10.1016/j.cnsns.2022.106751.

[10] G. K. Duong, T. E. Ghoul and H. Zaag. Sharp equivalent for the blowup profile to the gradient of a solution to the semilinear heat equation, submitted 2021, arXiv:2109.03497.

[11] A. Bensouilah, G. K. Duong, T. E. Ghoul, Non-self similar blowup solutions to the higher dimensional Yang-Mills heat flows, submitted 2022, arXiv:2204.02297.

[12] G. K. Duong, N. Nouaili and H. Zaag, Modulation theory for the flat blowup solutions of nonlinear heat equation, to appear Communications on Pure and Applied Analysis 2023, arXiv:2206.04378.

STUDENTS

1 Dang Minh Hieu, **Master**, *Institute of Mathematics of Vietnam*, 2022.

CONFERENCES AND SCIENTIFIC CONGRESS

1 Journées Jeunes EDPistes 2017, 03/2017, Autrans, France

2 French-American Conference on Nonlinear Dispersive PDEs, 06/2017, Luminy, Marseille, France

3 15th School on Interaction between Dynamical Systems, and Partial Differential Equations, 07/2017, Barcelona, Spain: **Poster**

4 VIe Colloque EDP-Normandie, 10/2017, Caen, France: **Poster**

5 Recent Trends in PDE, 01/2018, London, UK

6 Master class, 01/2018, Strassburg, France

7 Asymptotic analysis of dispersive partial differential equations, 05/2018, Florence, Italia: **Oral presentation**

8 The 9th Vietnam Mathematical Congress, 08/2018, Nha Trang, VietNam: **Oral presentation**.

9 One month in Chili University, Santiago, invited by Prof. Claudio Munioz: 31-July-2019-31-August-2019, financed by the University of Chili, Santiago, and the Foundation Sciences Mathématiques de Paris and Institute Galileé, Paris 13 University.

10 Winter School on Evolution Equations and Applications, HaNoi, Vietnam, from 21-September- 2019 to 23 - September 2019.

11 Workshop on Regularity theory for partial differential equation & Related topics, University Of Economics Ho Chi Minh City, 25, 7, 2022.

12 Workshop on PDE and related topics, Vietnam Institue for Advanced Study in Mathematics (VIASM), 25-28, 07, 2022.

13 VIASM Summer school "The mathematical of interaction Bose gases", VIASM, 1-5, 08, 2022.

14 Winter School on Mathematical Models and Dynamical Systems, Dalat, 9-11, 12, 2022.

PRIZE AND SPONSOR

Prize

- The National Olympiad of Mathematics for student of Universities in Vietnam: the 3^{rd} prizes in 2011, 2012 and 1^{st} in 2013
- Awarded the "An Giang Talent 2013"

Scholarship and Sponsor

- Second-year Master, 2015-2016: Fondation Sciences Mathématiques de Paris (FSMP), International Master program at Sorbonne Paris Nord University
- Ph. D education: INSPIRE program which has received funding from the European Unions Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 665850

Visiting positions

- Visitor: Center for Mathematical Modeling (CMM), Chili University , Santiago, Chile. Host by professor Claudio Munioz, sponsored by Stay of Ph.D students program from PSMP, 2019

- Visitor: CEREMADE, Paris Dauphine University, Paris, France. Host by Nejla Nouaili, sponored by CEREMADE Institute.

Projects and Funding

1 An Giang University project, number: **22.05.SP**, inspected in 2022.

2 Research project for outstanding young scientists of the International Center for Mathematical Research and Training, the Grant **ICRTM04_2021.05**, UNESCO, 2021-2023, in progress.