

Fangchi Yan

Curriculum Vitae

Department of Mathematics (0123)
463B McBryde Hall, Virginia Tech
225 Stanger Street
Blacksburg, VA 24061-1026

☎ (574) 340-2400
✉ fangchi@vt.edu
🏠 [Homepage](#)

EDUCATION

Ph.D., Mathematics, May 2020, *University of Notre Dame*. Advisor: Dr. Alex Himonas.
M.S., Mathematics, August 2017, *University of Notre Dame*. Advisor: Dr. Alex Himonas.
M.S., Applied Mathematics, July 2015, *Chinese Academy of Sciences*. Advisor: Dr. Zhenya Yan.
B.S., Mathematics and Applied Mathematics, June 2012, *Jilin University*, China.

ACADEMIC EMPLOYMENT

July 2022 – Postdoc, Department of Mathematics, Virginia Tech.
August 2020 – June 2022 Postdoc, Department of Mathematics, West Virginia University.

VISITING POSITIONS

May 14-June 27, 2024 Visiting Scholar, Department of Mathematics, University of Notre Dame.
May 14-July 7, 2023 Visiting Scholar, Department of Mathematics, University of Notre Dame.
May 17-July 17, 2022 Visiting Scholar, Department of Mathematics, University of Notre Dame.
June 15-July 31, 2021 Affiliate Postdoc, Department of Mathematics, University of Notre Dame.
June 1-July 31, 2020 Affiliate Postdoc, Department of Mathematics, University of Notre Dame.

PUBLICATIONS

1. F. Yan and Q. Zhang *Global solutions of quasi-geostrophic shallow-water fronts*. J. Differential Equations. **406** (2024), 1-86. DOI:[10.1016/j.jde.2024.05.054](https://doi.org/10.1016/j.jde.2024.05.054)
2. A. A. Himonas and F. Yan, *The Schrödinger-Korteweg-de Vries system on the half-line*. Appl. Numer. Math. **199** (2024), 32-58. DOI:[10.1016/j.apnum.2022.12.018](https://doi.org/10.1016/j.apnum.2022.12.018)
3. A. A. Himonas and F. Yan, *The Schrödinger equation with cubic nonlinearities on the half-line in low regularity spaces*. J. Math. Anal. Appl. (2024). DOI:[10.1016/j.jmaa.2024.128259](https://doi.org/10.1016/j.jmaa.2024.128259)
4. F. Yan and Q. Zhang, *Global solutions of quasi-linear Hamiltonian mKdV equation*, Nonlinear Anal. **240** (2024). DOI:[10.1016/j.na.2023.113454](https://doi.org/10.1016/j.na.2023.113454) .
5. A. A. Himonas and F. Yan, *The Modified Korteweg-de Vries system on the half-line*. J. Dynam. Differential Equations (2023). DOI:[10.1007/s10884-023-10271-5](https://doi.org/10.1007/s10884-023-10271-5)
6. A. A. Himonas and F. Yan, *The Majda-Biello system on the half-line*, Nonlinear Anal. **233** (2023), 113293, 50 pp. DOI:[10.1016/j.na.2023.113293](https://doi.org/10.1016/j.na.2023.113293)
7. A. A. Himonas and F. Yan, *On well-posedness of nonlocal evolution equations*. Vietnam J. Math. **51** (2023) 811–844. DOI:[10.1007/s10013-023-00615-5](https://doi.org/10.1007/s10013-023-00615-5)

8. A. A. Himonas and F. Yan, *A higher dispersion KdV equation on the half-line*. J. Differential Equations **333** (2022), 55–102. DOI:10.1016/j.jde.2022.06.003
9. A. A. Himonas and F. Yan, *The Korteweg-de Vries equation on the half-line with Robin and Neumann data in low regularity spaces*. Nonlinear Anal. **222** (2022), 113008, 31 pp. DOI:10.1016/j.na.2022.113008
10. A. A. Himonas, C. Madrid and F. Yan, *The Neumann and Robin problems for the Korteweg-de Vries equation*. J. Math. Phys. **62** (2021), no. 11. DOI: 10.1063/5.0064147 (selected as Editors' Pick)
11. F. Yan, *Well-posedness of a higher dispersion KdV equation on the half-line*. Thesis (Ph.D.)–University of Notre Dame, 2020, 167 pp. ProQuest LLC
12. R. Figueira, A. A. Himonas and F. Yan, *A higher dispersion KdV equation on the line*. Nonlinear Anal. **199** (2020), 112055. DOI: 10.1016/j.na.2020.112055
13. F. Yan, *Well-posedness of a higher dispersion KdV equation on the half-line*. J. Math. Phys. **61** (2020), no. 8. DOI: 10.1063/5.0020907 (selected as Editors' Pick)
14. A. A. Himonas, D. Mantzavinos and F. Yan, *The Korteweg–de Vries equation on an interval*. J. Math. Phys. **60** (2019), no. 5. DOI: 10.1063/1.5080366
15. A. A. Himonas, D. Mantzavinos and F. Yan, *The nonlinear Schrödinger equation on the half-line with Neumann boundary conditions*. Appl. Numer. Math. **141** (2019), 2-18. DOI:10.1016/j.apnum.2018
16. A. A. Himonas, D. Mantzavinos and F. Yan, *Initial-boundary value problems for a reaction-diffusion equation*. J. Math. Phys. **60** (2019), no. 8. DOI: 10.1063/1.5118767
17. Z. Yan and F. Yan, *Dark solitons for the defocusing cubic nonlinear Schrödinger equation with the spatially periodic potential and nonlinearity*. Commun. Theor. Phys. (Beijing) **64** (2015), no. 3, 309-319. DOI: 10.1088/0253-6102/64/3/309

Submitted

1. S.-M. Sun and F. Yan, *Radial Solutions of Initial Boundary Value Problems of Nonlinear Schrödinger Equations in \mathbb{R}^n* , (2023).

TEACHING EXPERIENCE

Virginia Tech

- Introduction to Differential Equations (Math 2214) Spring 2024
- Introduction to Differential Equations (Math 2214) Fall 2023
- Introduction to Differential Equations (Math 2214) Spring 2023
- Introduction to Differential Equations (Math 2214) Fall 2022

West Virginia University

- Elementary Differential Equations (Math 261) Spring 2022
- Calculus II (Math 156) Fall 2021
- Multivariable Calculus (Math 251) Spring 2021
- Calculus 1a with Precalculus (Math 153) Fall 2020
- Calculus II (Math 156) Fall 2020

University of Notre Dame

- Elements of Calculus I (Math 10250) Fall 2019
- Elements of Calculus I (Math 10250) Fall 2018

AWARDS, GRANTS, AND HONORS

- June 2024** Postdoctoral Travel Award, Virginia Tech. (\$500)
- April 2019** Graduate Student Union Conference Presentation Grant, University of Notre Dame. (\$250)
- March 2018** Graduate Student Union Conference Presentation Grant, University of Notre Dame. (\$250)

PROFESSIONAL SERVICES

- Organizer of Special Session on “Evolution Equations and Integrable Systems”
Co-organized with Alex Himonas and Curtis Holliman
SIAM Conference on Nonlinear Waves and Coherent Structures
June 24 - June 27, 2024 — Baltimore, MD
- Organizer of Special Session on “Evolution Equations and Integrable Systems”
Co-organized with Alex Himonas and Curtis Holliman
13th AIMS Conference on Dynamical Systems, Differential Equations, and Applications
May 31 - June 4, 2023 — Wilmington, NC
- Special Assistant to organizers
87th Midwest PDE Seminar
May 5-7, 2023 — Notre Dame, IN
- Organizer of Minisymposium on “Recent Developments in Partial Differential Equations and Applications”
Co-organized with Roberto Capistrano-Filho
SIAM Southeastern Atlantic Section Annual Meeting (SIAM-SEAS23)
March 25-26, 2023 — Blacksburg, VA
- Organizer of SIAM Southeastern Atlantic Section Annual Meeting (SIAM-SEAS23)
Co-organized with Traian Iliescu, Leo G. Rebholz, Nicole Abaid, etc.
March 25-26, 2023 — Blacksburg, VA
- Organizer of Special Session on “Evolution Equations and Integrable Systems”
Co-organized with Alex Himonas, Curtis Holliman, and Dionyssios Mantzavinos
12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena
March 30-April 1, 2022 — Athens, GA

INVITED TALKS: CONFERENCES, SEMINARS & COLLOQUIA

1. Analysis & Math Physics Seminar, Virginia Tech. Talk title: *Global solutions of quasi-geostrophic shallow-water fronts* . **September 18, 2024**
2. SIAM Conference on Nonlinear Waves and Coherent Structures. Talk title: *The well-posedness of a mKdV system on the half-line*. **June 25, 2024**
3. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *The Schrödinger equation with cubic nonlinearities on the half-line in low regularity spaces*. **May 14, 2024**
4. PDEs in fluid mechanics and atmospheric sciences, West Virginia University. Talk title: *Exploring global solutions for the quasi-linear mKdV equations*, **April 13, 2024**
5. 2024 Spring Eastern Sectional Meeting. Talk title: *Global solutions of quasi-linear Hamiltonian mKdV equation*, **April 7, 2024**

6. American Mathematical Society's Fall Eastern Sectional Meeting, University at Buffalo, SUNY. Talk title: *Well-posedness of initial-boundary value problems for coupled mKdV systems*, **September 9, 2023**
7. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *Trilinear estimates for nonlocal equations*. **June 9, 2023**
8. The 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, University of North Carolina Wilmington. Talk title: *The well-posedness of a KdV system on the half-line*. **June 1, 2023**
9. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *Initial-boundary value problems for KdV type systems*. **May 23, 2023**
10. 87th Midwest PDE Seminar, University of Notre Dame. Talk title: *The Schrödinger-Korteweg-De Vries system on the half-line*. **May 5, 2023**
11. SIAM Southeastern Atlantic Section Annual Meeting, Virginia Tech. Talk title: *Well-posedness of the Robin and Neumann problem for the KdV equation on the half-line*. **March 25, 2023**
12. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *The Robin and Neumann problems for KdV on the half-line*. **October 11, 2022**
13. Analysis & Math Physics Seminar, Virginia Tech. Talk title: *The initial-boundary value problem of a higher dispersion KdV equation*. **September 28, 2022**
14. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *KdV bilinear estimates in modified Bourgain spaces*. **June 21, 2022**
15. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *The Korteweg-de Vries equation on the half-line with Robin and Neumann data in low regularity spaces*. **June 7, 2022**
16. 12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia.
Talk title: *A higher dispersion KdV on the half-line*. **March 30, 2022**
17. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *Initial-boundary value problems for the Korteweg-de Vries equation*. **July 8, 2021**
18. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *Well-posedness of Korteweg-de Vries type equations*. **October 27, 2020**
19. Colloquium of Math Department, West Virginia University. Talk title: *Well-posedness of a higher dispersion KdV equation on the half-line*. **September 30, 2020**
20. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *Well-posedness of the initial-boundary value problem for KdV type equations*. **September 17, 2019**
21. 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia. Talk title: *The Korteweg-de Vries equation on an interval*. **April 18, 2019**
22. 2019 Joint Mathematics Meetings, Baltimore, MD. Talk title: *The nonlinear Schrödinger equation on the half-line with Neumann boundary conditions*. **January 17, 2019**
23. PDE, Complex Analysis and Differential Geometry Seminar, University of Notre Dame. Talk title: *The nonlinear Schrödinger equation on the half-Line with Neumann boundary conditions*. **November 20, 2018**

24. 10th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia. Talk title: *The unified transform method and well-posedness of the general NLS on the half line.* **March 30, 2017**

OTHER CONFERENCES ATTENDED

- Midwest Several Complex Variables: A Conference in Honor of Mei-Chi Shaw, University of Notre Dame, Notre Dame, IN. **April 29 – May 1, 2022**
- New horizons in dispersive hydrodynamics, Isaac Newton Institute for Mathematical Sciences (online workshop), Cambridge, UK. **June 21-July 2, 2021**
- AMS Spring Central Sectional Meeting, Ohio State University, Columbus, OH. **March 17-18, 2018**
- 79/80th Midwest PDE Seminar, University of Illinois at Chicago, Chicago, IL. **September 14-17, 2017**

PROFESSIONAL MEMBERSHIPS

- American Mathematical Society (AMS) since 2015.
- Society for Industrial and Applied Mathematics (SIAM) since 2016.

REFERENCES

Prof. A. S. Fokas
 Dept. of Applied Mathematics and
 Theoretical Physics, University of Cambridge
 Cambridge, CB3 0WA, UK
 +44(0)1223 339 733
T.Fokas@damtp.cam.ac.uk

Prof. Heath David Hart
 Dept. of Math, Virginia Tech
 Blacksburg, VA 24061-1026
 540-231-8514
heathdav@math.vt.edu

Prof. Alex Himonas
 Dept. of Math, University of Notre Dame
 Notre Dame, IN 46556-4618
 574-631-7583
himonas@nd.edu

Prof. Gerard Misiolek
 Dept. of Math, University of Notre Dame
 Notre Dame, IN 46556-4618
 574-631-4179
gmisiole@nd.edu

Prof. Mei-Chi Shaw
 Dept. of Math, University of Notre Dame
 Notre Dame, IN 46556-4618
 574-631-6357
meichi@nd.edu

Prof. Shu-Ming Sun
 Dept. of Math, Virginia Tech
 Blacksburg, VA 24061-1026
 540-231-8042
sun@math.vt.edu

Prof. Qingtian Zhang
 Dept. of Math, Shenzhen University
 Shenzhen, China 518060
zhang-qingtian@szu.edu.cn