

# Yadong Liu

## Curriculum Vitæ

School of Mathematical Sciences  
Nanjing Normal University  
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*“Ein Mathematiker ist eine Maschine, die Kaffee in Theoreme umwandelt” - Alfréd Rényi*

## Personal Information

Gender Male  
Birth November 27, 1996 (Yancheng, Jiangsu, China)  
Nationality Chinese  
Homepage <https://homepages.uni-regensburg.de/~liy02651/>

## Employment

2024.01 – Now **Lecturer, Nanjing Normal University**, Nanjing, China  
2023.08 – 2023.12 **Wissenschaftlicher Mitarbeiter (Postdoc)**  
**University of Regensburg**, Regensburg, Germany  
Supported by startup funding of RTG 2339 *Interfaces, Complex Structures, and Singular Limits* of the German Research Foundation (DFG)  
2020.10 – 2023.07 **Wissenschaftlicher Mitarbeiter (Research Assistant)**  
**University of Regensburg**, Regensburg, Germany  
In RTG 2339 *Interfaces, Complex Structures, and Singular Limits* of the German Research Foundation (DFG)

## Education

2020.10 – 2023.07 **Dr. rer. nat. in Mathematics**  
**University of Regensburg**, Regensburg, Germany  
Dissertation: Analysis of fluid-structure interaction problems with growth  
Grade: *magna cum laude*  
Supervisors: Prof. Dr. Helmut Abels & PD Dr. Maria Neuss-Radu  
Defense Committee: Bernd Ammann, Helmut Abels, Matthias Hieber, Harald Garcke, Bogdan Matioc.  
2018.09 – 2020.06 **M.Sc. in Mathematics**  
**Nanjing University of Information Science and Technology**, Nanjing, China  
Thesis: Existence and asymptotic behavior of solutions for incompressible Navier–Stokes equations and related coupling problems  
Supervisor: *Prof. Wenjun Liu*  
2015.09 – 2018.06 **B.Sc. in Mathematics and Applied Mathematics**  
**Nanjing University of Information Science and Technology**, Nanjing, China

Thesis: Blood flow analysis in tapered stenosed arteries with influence of heat and mass transfer

Supervisor: *Prof. Wenjun Liu*

2014.09 – 2015.07 **Undergraduate study in Physics**

**Nanjing University of Information Science and Technology**, Nanjing, China

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## Research Interests

### Analysis of nonlinear partial differential equations

- Free boundary problems
- Mathematical fluid dynamics
- Fluid-structure interaction problems
- Two-phase viscoelastic flow
- Moving contact line problems

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## Publications & Preprints

### ○ Preprints

10. **Y. Liu**, S. Mitra and Š. Nečasová, On a compressible fluid-structure interaction problem with slip boundary conditions, (2024) arXiv: 2405.09908.
9. H. Abels, **Y. Liu** and Š. Nečasová, Low mach number limit of a diffuse interface model for two-phase flows of compressible viscous fluids, (2024) arXiv: 2402.04372.
8. **Y. Liu** and D. Trautwein, On a diffuse interface model for incompressible viscoelastic two-phase flows, (2022) arXiv: 2212.13507.

### ○ Publications in Peer-Reviewed Journals

7. H. Abels and **Y. Liu**, Short time existence of a quasi-stationary fluid-structure interaction problem for plaque growth, *Adv. Nonlinear Anal.* **12** (2023), no. 1, 20230101. DOI: 10.1515/anona-2023-0101.
6. H. Abels and **Y. Liu**, On a fluid-structure interaction problem for plaque growth: cylindrical domain, *J. Differential Equations* **345** (2023), 334–400. DOI: 10.1016/j.jde.2022.11.046
5. H. Abels and **Y. Liu**, On a fluid-structure interaction problem for plaque growth, *Nonlinearity* **36** (2023), 537–583. DOI: 10.1088/1361-6544/aca5e1
4. Y. Zheng, W. Liu and **Y. Liu**, Equivalence between internal observability and exponential stabilization for suspension bridge problem, *Ric. Mat.* **71** (2022), no. 2, 711–721. DOI: 10.1007/s11587-021-00566-4
3. W. Liu, Y. Luan, **Y. Liu** and G. Li, Well-posedness and asymptotic stability to a laminated beam in thermoelasticity of type III, *Math. Methods Appl. Sci.* **43** (2020), no. 6, 3148–3166. DOI: 10.1002/mma.6108
2. **Y. Liu** and W. Liu, Blood flow analysis in tapered stenosed arteries with the influence of heat and mass transfer, *J. Appl. Math. Comput.* **63** (2020), no. 1-2, 523–541. DOI: 10.1007/s12190-020-01328-5
1. **Y. Liu** and W. Liu, Chaotic behavior analysis and control of a toxin producing phytoplankton and zooplankton system based on linear feedback, *Filomat* **32** (2018), no. 11, 3779–3789. DOI: 10.2298/fil1811779l

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## Academic Activities

- **Research stays**

- June–July 2024 Fakultät Mathematik, Universität Regensburg, Regensburg, Germany  
Host Professor: Prof. Dr. *Helmut Abels*
- Nov. 2023 Institute of Mathematics, Czech Academy of Sciences, Prague, Czech Republic  
Host Professor: RNDr. *Šárka Nečasová*, DSc
- Oct. 2023 Institute for Analysis, Karlsruhe Institute of Technology, Karlsruhe, Germany  
Host Professor: JProf. Dr. *Xian Liao*
- Aug. 2023 School of Mathematical Sciences, Fudan University, China  
Host Professor: Prof. *Hao Wu*, Ph.D.
- Nov. 2022 Institute of Mathematics, Czech Academy of Sciences, Prague, Czech Republic  
Host Professor: RNDr. *Šárka Nečasová*, DSc
- Apr.–June 2022 Institute of Mathematics, Czech Academy of Sciences, Prague, Czech Republic  
Host Professor: RNDr. *Šárka Nečasová*, DSc
- **Organisation of meetings**
  - Oct. 2022 Annual Meeting of RTG 2339 *IntComSin*, Weltenburg  
Co-organized and contributed talk
  - Apr. 2022 Workshop on *Analysis of Fluid and Elastic Bodies Interactions*, Regensburg  
Co-organized and contributed talk
  - **Invited talks**
  - Apr. 2024 *Youth Seminar of Differential Equations*, Anhui Normal University, Wuhu, China
  - Nov. 2023 Seminar on *Partial Differential Equations*, Institute of Mathematics, Czech Academy of Sciences, Prague, Czech Republic
  - Oct. 2023 Seminar of the Work Group *Nonlinear Partial Differential Equations*, Karlsruhe Institute of Technology, Karlsruhe
  - Aug. 2023 *ICIAM 2023*, 10th International Congress on Industrial and Applied Mathematics, Waseda University, Tokyo, Japan  
Minisymposium *Modeling and Computation for Interface Dynamics in Fluids and Solids*
  - Aug. 2023 *Mathematics Integrated Seminar*, School of Mathematical Sciences, Fudan University, China
  - Dec. 2022 SEU Yau Center *Geometry and PDE* Weekend Seminar, Nanjing, China (online)
  - Apr. 2022 Working Seminar on Partial Differential Equations, Institute of Mathematics, Czech Academy of Sciences, Prague, Czech Republic
  - **Participants and talks**
  - June 2024 *Equadiff 2024*, Karlstad, Sweden  
Contributed talk
  - May 2024 *The 5th International Symposium on Biological Mathematics and Medical Applications*, Nanjing, China  
Contributed talk
  - May 2024 *11th Youth Forum of Partial Differential Equations*, Wuhu, China
  - Nov. 2023 International Workshop *Vector- and Tensor-Valued Surface PDEs*, Dresden  
Contributed talk
  - Oct. 2023 Oberwolfach Seminar: *Recent Topics on the Navier-Stokes Equations*, Oberwolfach  
Small talk

- Sept. 2023 11th GAMM Workshop on *Analysis of PDEs*, Eichstätt  
Contributed talk
- Sept. 2023 Workshop on *Energetic Methods for Multi-Component Reactive Mixtures: Modelling, Stability, and Asymptotic Analysis*, WIAS Berlin  
Contributed talk
- June 2023 Shocking Developments: *New Directions in Compressible and Incompressible Flows: A Conference in Honor of Alexis Vasseur's 50th Birthday*, Max Planck Institute for Mathematics in the Sciences, Leipzig
- May 2023 The *GAMM Annual Meeting 2023*, Dresden  
Contributed talk in Session *Applied Analysis*
- Mar. 2023 Workshop on *Analysis of PDEs*, Karlsruhe
- Aug. 2022 Conference on *Mathematical Fluid Mechanics*, Prague, Czech Republic  
Contributed talk
- Aug. 2022 The *GAMM Annual Meeting 2022*, Aachen  
Contributed talk in Session *Applied Analysis*
- Aug. 2022 Hausdorff School on *Geometric Analysis and Nonlinear PDEs*, Bonn  
Poster
- June 2022 Lake Como School of Advanced Studies *Mathematical Models for Bio-Medical Sciences*, Como, Italy  
Contributed talk
- May 2022 International Symposium on *Biological Mathematics and Medical Applications*, NUIST, Nanjing, China (online)  
Contributed talk at Graduate Forum
- May 2022 Conference *Nonlinear PDEs in Fluid Dynamics*, CIRM, Marseille Luminy, France
- Apr. 2022 Research school *Mathematical Advances in Geophysical Flows*, CIRM, Marseille Luminy, France  
Small talk
- Mar. 2022 SIAM Conference on *Analysis of Partial Differential Equations*, Berlin (online)
- Mar. 2022 Workshop on *Mathematical Methods for Complex Phenomena*, Regensburg  
Contributed talk
- Mar. 2022 Workshop on *PDEs for Surfaces and Interfaces*, Regensburg
- Oct. 2021 9th GAMM Workshop on *Analysis of PDEs*, Freiburg
- Oct. 2021 Annual Meeting of RTG 2339 *IntComSin*, Weltenburg (talk)
- Sept. 2021 International Conference *Free Boundary Problems*, Berlin (online)
- Aug. 2021 Summer School *Fluids under Control*, Prague (online)
- Aug. 2021 Germany-Japan Workshop on *Problems Related to Free Boundaries and Moving Contact Lines*, Tokyo (online)
- Oct. 2020 TES Student Compact Course *Variational Methods for Fluids and Solids*, Berlin (online)

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## Honors & Awards

- Nov. 2021 **Excellent academic degree master's thesis** of Jiangsu Province, Jiangsu Academic Degree Committee

- Oct. 2019 **National Scholarships for Graduate Students**, Ministry of Education of the People's Republic of China
- Oct. 2019 **First Prize**, Postgraduate Scholarship, Nanjing University of Information Science and Technology
- Oct. 2019 **National Second Prize**, 16th National Graduate Mathematical Modeling Contest
- June 2018 **Outstanding Graduates**, Nanjing University of Information Science and Technology
- Apr. 2017 **Meritorious Winner**, Mathematical Contest In Modeling/Interdisciplinary Contest In Modeling
- Oct. 2016 **National First Prize**, Contemporary Undergraduate Mathematical Contest in Modeling
- Nov. 2015 **First Prize**, Merit Scholarship, Nanjing University of Information Science and Technology

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## Languages & Skills

- Languages Chinese Mandarin (Native)  
Yancheng dialect (Native)  
English (Fluent)  
German (Elementary)
- Programing MATLAB, Mathematica, SPSS

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## References & External Links

### ○ References

- Prof. Dr. **Helmut Abels**  
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Universität Regensburg  
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- RNDr. **Šárka Nečasová**, DSc.  
Institute of Mathematics  
Czech Academy of Science  
Žitná 25  
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- Prof. Dr. **Harald Garcke**  
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Universitätsstraße 31  
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- PD Dr. **Maria Neuss-Radu**  
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- Prof. **Wenjun Liu**  
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Nanjing University of Information Science and Technology  
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Nanjing 210044, China  
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### ○ External Links

- School of Mathematical Sciences, Nanjing Normal University
- Research Training Group 2339 (RTG 2339) *Interfaces, Complex Structures, and Singular Limits*

- GAMM Activity Group *Analysis of Partial Differential Equations*
- Fakultät für Mathematik, Universität Regensburg