

# Manuel Rissel

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NYU-ECNU Institute of Mathematical Sciences  
New York University Shanghai  
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Shanghai, China

## Current position

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2022 – on      **Postdoctoral Fellow**  
New York University Shanghai, China

## Education

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- 2018 – 2022      **Ph.D. in Mathematics**  
Shanghai Jiao Tong University, China  
Thesis title: *On the controllability of several mathematical models for incompressible magnetohydrodynamic flows*  
Advisor: Prof. Dr. Ya-Guang Wang
- 2016 – 2018      **M.Sc. in Mathematics**  
Shanghai Jiao Tong University, China  
Dual-degree program with the University of Konstanz, Germany  
Advisor: Prof. Dr. Ya-Guang Wang
- 2015 – 2018      **M.Sc. in Mathematics**  
University of Konstanz, Germany  
Advisor: Prof. Dr. Robert Denk
- 2012 – 2015      **B.Sc. in Mathematics**  
University of Konstanz, Germany  
Advisor: Prof. Dr. Robert Denk

## Research areas

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I am primarily interested in the analysis of partial differential equations, where my work focuses on controllability problems related to fluid models such as the Navier–Stokes system, the Boussinesq approximation, and magnetohydrodynamics. One of my main goals is to reduce the number of required controls to steer such systems, and to obtain results that hold for large data. My research is naturally connected to other topics such as ergodicity and mixing in fluid flow.

## Publications

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- [1] V. Nersesyanyan and M. Rissel, “Localized and degenerate controls for the incompressible navier–stokes system,” *Accepted for publication in Communications on Pure and Applied Mathematics*, 2024.
- [2] L. Mertz, V. Nersesyanyan, and M. Rissel, “Exponential mixing of constrained random dynamical systems via controllability conditions,” *SIAM Journal on Control and Optimization*, vol. 62, no. 6, pp. 3266–3287, 2024. [Online]. Available: <https://doi.org/10.1137/24M164999X>

- [3] M. Rissel and Y.-G. Wang, “Small-time global approximate controllability for incompressible mhd with coupled navier slip boundary conditions,” *J. Math. Pures Appl.*, vol. 190, p. 103601, 2024. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0021782424000990>
- [4] M. Rissel and Y.-G. Wang, “Global exact controllability of ideal incompressible magnetohydrodynamic flows through a planar duct,” *ESAIM Control Optim. Calc. Var.*, vol. 27, pp. Paper No. 103, 24, 2021. [Online]. Available: <https://doi.org/10.1051/cocv/2021099>
- [5] M. Rissel and Y.-G. Wang, “Remarks on exponential stability for a coupled system of elasticity and thermoelasticity with second sound,” *J. Evol. Equ.*, vol. 21, no. 2, pp. 1573–1599, 2021. [Online]. Available: <https://doi.org/10.1007/s00028-020-00636-4>

## Preprints

- M. Rissel, “Global controllability of Boussinesq channel flows only through the temperature”, 2024, <https://doi.org/10.48550/arXiv.2411.02200>.
- V. Nersesyan, M. Rissel, “Global controllability of Boussinesq flows by using only a temperature control”, 2024, <https://doi.org/10.48550/arXiv.2404.09903>.
- M. Rissel, 2023, “Exact controllability of incompressible ideal magnetohydrodynamics in 2D”, <https://doi.org/10.48550/arXiv.2306.03712>.

## Speaking

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- Math Postdoc Seminar Series, NYU-ECNU Institute of Mathematical Sciences at NYU Shanghai, November 22, 2023
- Analysis and PDE Seminar, Beijing International Center for Mathematical Research and Peking University, November School of Mathematical Sciences, November 13, 2023
- The 31st Yangtze River Conference on PDEs, Ningbo, November 12, 2023
- 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, August 22, 2023
- Oberseminar Partielle Differentialgleichungen, University of Konstanz, June 15, 2023
- 10th Anniversary NYU Shanghai Postdoctoral and Doctoral Research Assembly, April 21, 2023
- Applied Math PhD Seminar, Fudan University, Shanghai, April 13, 2023
- Northeast Normal University, Changchun (online), December 21, 2022
- Oberseminar Partielle Differentialgleichungen, University of Konstanz, December 10, 2020
- International Workshop on Applied Mathematics and Statistics, School of Mathematical Sciences, Shanghai Jiao Tong University and Department of Mathematics, University of Iowa (online), December 10, 2020

## Organization

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- ▷ Co-organizer of the Minisymposium “*Interplay between controllability and qualitative aspects of stochastic dynamical systems*” at the 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023) in Tokyo

## Teaching

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### Lectures

2024 Fall	<b>Precalculus (MATH-SHU 9)</b> New York University Shanghai
2024 Summer	<b>Calculus (MATH-SHU 131)</b> New York University Shanghai
2023 Summer	<b>Calculus (MATH-SHU 131)</b> New York University Shanghai

## Recitation Lectures

2024 Summer	<b>Calculus Recitations (MATH-SHU 131)</b> New York University Shanghai
2024 Spring	<b>Functions of a Complex Variable Recitations (MATH-SHU 282 002)</b> New York University Shanghai
2024 Spring	<b>Multivariable Calculus Recitations (MATH-SHU 151 003)</b> New York University Shanghai
2023 Fall	<b>Functional Analysis Recitations (MATH-SHU 226 002)</b> New York University Shanghai
2023 Fall	<b>Multivariable Calculus Recitations (MATH-SHU 151 003)</b> New York University Shanghai
2023 Summer	<b>Calculus Recitations (MATH-SHU 131)</b> New York University Shanghai
2023 Spring	<b>Multivariable Calculus Recitations (MATH-SHU 151 003 and 004)</b> New York University Shanghai
2023 Spring	<b>Linear Algebra Recitations (MATH-SHU 140 004)</b> New York University Shanghai
2022 Fall	<b>Multivariable Calculus Recitations (MATH-SHU 151 003)</b> New York University Shanghai
2016 Spring	<b>Student TA, Stochastics I - Part A</b> Read by Dr. Markus Kunze at University of Konstanz
2015/2016 Fall	<b>Student TA, Numerics of Partial Differential Equations</b> Read by Prof. Dr. Stefan Volkwein at University of Konstanz
2015 September	<b>Student TA, Mathematics Preparation Course</b> Read by Dr. Duc Khiem Huynh at University of Konstanz
2015 Spring	<b>Student TA, Analysis II</b> Read by Prof. Dr. Oliver Schnürer at University of Konstanz
2014/2015 Fall	<b>Student TA, Linear Algebra I</b> Read by Prof. Dr. Arno Fehm at University of Konstanz
2014 Spring	<b>Student TA, Linear Algebra II</b> Read by Prof. Dr. Salma Kuhlmann at University of Konstanz

## Awards & Honors

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- 2023 Best oral presentation award at the 10th Anniversary NYU Shanghai Postdoctoral and Doctoral Research Assembly
- 2022 – on Postdoctoral fellowship at New York University Shanghai
- 2018 – 2022 Chinese Government Scholarships by China Scholarship Council (CSC)
- 2021 上海市现代分析前沿科学研究基地博士生“吴文俊奖学金”特别奖  
Wu Wen-Tsun Scholarship for Outstanding Doctoral Students