# Manuel Rissel

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# **Current position**

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

# Education

2018 – 2022	<b>Ph.D. in Mathematics</b> 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	<b>M.Sc. in Mathematics</b> Shanghai Jiao Tong University, China Dual-degree program with the University of Konstanz, Germany Advisor: Prof. Dr. Ya-Guang Wang
2015 – 2018	<b>M.Sc. in Mathematics</b> University of Konstanz, Germany Advisor: Prof. Dr. Robert Denk
2012 – 2015	<b>B.Sc. in Mathematics</b> University of Konstanz, Germany Advisor: Prof. Dr. Robert Denk

#### **Research** areas

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

- [2] L. Mertz, V. Nersesyan, 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

 $\circ$  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

 $_{\odot}$  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
- o 10th Anniversary NYU Shanghai Postdoctoral and Doctoral Research Assembly, April 21, 2023
- Applied Math PhD Seminar, Fudan University, Shanghai, April 13, 2023
- $\circ$  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

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

Lectures

#### 2024 **Precalculus (MATH-SHU 9)** Fall New York University Shows of

New York University Shanghai

2024 Summer Calculus (MATH-SHU 131) New York University Shanghai

2023 Summer Calculus (MATH-SHU 131) New York University Shanghai

#### **Recitation Lectures**

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

# Awards & Honors

- 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