

Changzhen Sun

Curriculum Vitae

Personal Information

Name Changzhen Sun **Gender** Male

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Employment

10/2023– Junior CNRS researcher affiliated at [Laboratoire de Mathématiques de Besançon](#) (LMB, UMR 6623), Besançon.

10/2021– Postdoc in Institute of Mathematics of Toulouse (IMT), funded by [Labex CIMI](#).
09/2023

Education

2018–2021 **Ph.D.**, Laboratory of Mathematics of Orsay, University of Paris-Saclay,
Advisor: Prof. [Frédéric Rousset](#).

2017–2018 **Master 2**, University of Paris-Saclay.

Discipline: Analyse-Modeling-Simulation. Mention: Très bien.

2016–2017 **Master 1**, Institute of Mathematics of Chinese Academy of Sciences

Advisor: Prof. [Ping Zhang](#).

2012–2016 **Bachelor**, Shandong University

Discipline: Mathematics, 1st rank in Hua Lo-keng class.

Research Interest

My research interest lies in the analysis of partial differential equations. I have been focusing on the singular limits and uniform regularity for fluid systems during my Ph.D. Recently, I am also working on the stability of non-constant solutions, like periodic waves and solitary waves.

Publications

Articles 1. [Stability of equilibria uniformly in the inviscid limit for the Navier-Stokes-Poisson system](#)

Annales de l'Institut Henri Poincaré / Analyse non lineaire., 2021, with F. Rousset

2. [Large time existence of two-fluid Euler-Maxwell and Euler-Korteweg with vorticity](#)
Nonlinear Analysis, 2021

3. [Long-Term Regularity of Two-Dimensional Navier–Stokes–Poisson Equations](#),
SIAM J. Math. Anal., 2021

4. [Uniform regularity for the compressible Navier-Stokes system with low Mach number in domains with boundaries](#).

Journal de Mathématiques Pures et Appliquées, 2022, with N. Masmoudi and F. Rousset.

5. [Incompressible limit for the free surface Navier-Stokes system](#),
Annals of PDE, 134 pages, with N. Masmoudi and F. Rousset.

6. [Spectral instability of small-amplitude periodic waves of the electronic Euler-Poisson system](#).

Nonlinearity, 36 pages, with P. Noble and L.M.Rodrigues

Preprints 1. [Uniform regularity in the low Mach number and inviscid limits for the full Navier-Stokes system in domains with boundaries](#).

arXiv:2204.09799, 114 pages.

2. [Linear asymptotic stability of small-amplitude periodic waves of the generalized Korteweg–de Vries equations](#), with C. Audiard and L.M.Rodrigues

Research funding

[PEPS-JCJC funding for young researchers from INSMI, CNRS](#)

Project Stability, large time behaviour and singular limit problems in fluid mechanics,

PI Changzhen Sun **Date:** Feb-Dec/2022 **Amount:** 3800€

Invited Talks

Conferences

22-03-2023 • Journées Jeune EDPistes 2023

06-04-2022 • Mathematical Advances in Geophysical Flows, Cirm, (short presentation)

15-06-2021 • Long Time Behavior and Singularity Formation in PDEs, NYU Abu Dhabi

28-10-2020 • Vorticity, Rotation and Symmetry (V)–Global Results and Nonlocal Phenomena, Cirm.

Seminars

09/11/2023 • Seminar at LMB, Besançon,

18&25/09/2023 • Seminar at PolyU, Hong-Kong,

09/11/2022 • Seminar in SITE center, NYU-Abu Dhabi,

07/09/2022 • Seminar on analysis and PDEs, Chinese Academy of Sciences,

14,18/06/2022 • Seminar of analysis of PDEs, Shandong University, two lectures,

17-01-2022 • Seminar on AGM research center, CY Cergy Paris University,

08-01-2022 • Seminar on analysis and PDEs, Peking University,

- 16-11-2021 • Seminar on Mathematical physics, Institute of Mathematics of Bordeaux,
- 23-10-2021 • Analysis seminar of Beijing Institute of technology,
- 19-10-2021 • Seminar on Analysis and Calculation, University Toulouse III,
- 07-07-2021 • PDEs seminar, KIT,
- 07-04-2021 • Seminar on Analysis, Geometry, and PDEs, Lund University,
- 01-04-2021 • PDEs seminar of University Rennes I,
- 07-06-2020 • Weekly seminar of PDEs of Chinese young researchers in France,
- 14-05-2020 • Seminar of PDEs and numerical analysis, LMO, Orsay,
- 06-02-2020 • Student Seminars on PDEs and harmonic analysis, Orsay,
- 19-08-2019 • Seminar of PDEs and analysis, Peking University,

Invited visits

- 07-2023 • University of Rennes 1, one week, invited by Prof. Miguel Rodrigues,
- 06-2023 • University Paris-Saclay, invited by prof. Frédéric Rousset
- 11-2022 • NYU Abu-Dhabi, two weeks, invited by Prof. Nader Masmoudi
- 04-2022 • University of Rennes 1, one week, invited by Prof. Miguel Rodrigues,
- 11-2021 • University of Rennes 1, one week, invited by Prof. Miguel Rodrigues,
- 07-2019 • Institute of Chinese Academy of Sciences, two weeks, invited by Prof Ping Zhang.

Participated conferences/schools

- 07-2022 • When kinetic theory meets fluid mechanics, ETH
- 04-2022 • Mathematical Advances in Geophysical Flows, Cirm
- 09-2021 • Fluid Mechanics: qualitative study and asymptotic behavior, Peyresq,
- 08-2021 • Fluid Dynamics: advanced Summer School, Corsica
- 10-2020 • Vorticity, Rotation and Symmetry (V), Cirm, Marseille
- 01-2020 • 11th Itinerant Workshop in PDEs , HCM, Bonn,
- 09-2019 • Inhomogeneous flows: Asymptotic models and interface evolution, Cirm
- 08-2019 • National graduate summer school on PDEs, Xiamen
- 06-2019 • Journées Équations aux Dérivées Partielles, Obernai
- 03-2019 • Conference celebrating prof. Jean-Yves-Chemin's 60th birthday, IHP, Paris

Referee for international journals

Archive for Rational Mechanics and Analysis (3 times), SIAM journal on Mathematical analysis, Nonlinearity, Mathematical Models and Methods in Applied Sciences, Mathematische Nachrichten.

Teaching experience

- 2016-2017 • Teaching assistant on Mathematical analysis, University of Chinese Academy of Sciences.
- 2021-2022 • Lecturer and teaching assistant on Mathematics for engineer students, Toulouse.

Achievements & Honors

- 2022 Outstanding thesis award for self-funded students, from Chinese Scholarship Council.
- 2017-2018 International Master's Scholarship of University Paris-Saclay,
- 2016 Hua Lo-Keng Scholarship of Institute of Mathematics of Chinese Academy of Sciences,
- 2015 Meritorious Winner of American Mathematical contest in Modeling,
(with Tianyu Wang and Yuliang Xiu)
- 2015 Pan Cheng-Dong Scholarship of Shandong University (for talented students in Math)
- 2015 First Prize in the Chinese Mathematics Competitions (Shandong province)
- 2014, 2015 Chinese National Scholarship (two times)
- 2013-2015 First class Scholarship of Shandong University (three times)

Languages

- Chinese **Native language**
- English **Fluent (CET 6)**