

SIRAN LI

Rice University, Mathematics Department, MS 136, P. O. Box 1892 \diamond Houston, Texas, USA, 77251
+1 (832) \cdot 908 \cdot 6871 \diamond Siran.Li@rice.edu

EDUCATION

-
- | | |
|---|------------------|
| University of Oxford, UK
<i>D. Phil.</i> in Mathematics, supervised by Prof. Gui-Qiang G. Chen. | <i>2013–2017</i> |
| Columbia University, New York, USA
<i>B. A.</i> in Mathematics; GPA: 3.92/4.00;
Phi Beta Kappa; Magna cum Laude. | <i>2009–2013</i> |

EMPLOYMENT HISTORY

-
- | | |
|---|---|
| Rice University
<i>G. C. Evans Instructor</i>
\cdot Mentor: Prof. Robert M. Hardt | August 2017 — Present
<i>Houston, Texas, USA</i> |
| Centre de Recherches Mathématiques
<i>CRM–ISM Postdoctoral Fellow</i>
\cdot Hosts: Profs. Galia Dafni, Pengfei Guan, Dmitry Jakobson, Adam Oberman, and Alexander Shnirelman | June 2018 — May 2019
<i>Montreal, Quebec, Canada</i> |
| University of Oxford
<i>Stipendiary Lecturer</i>
\cdot Tutor in mathematics at Exeter and Oriel Colleges, University of Oxford | October 2015 — June 2017
<i>Oxford, UK</i> |

PERSONAL DATA

Born on 19 September 1991; Citizen of P. R. China; Married to Xiaoqian Louise Lin; 1 child.

RESEARCH PUBLICATIONS

-
1. A. Archarya, G.-Q. Chen, **S. Li**, M. Slemrod, and D. Wang, Fluids, elasticity, geometry, and the existence of wrinkled solutions, **Arch. Ration. Mech. Anal.** 226 (2017), 1009–1060.
 2. G.-Q. Chen and **S. Li**, Global weak rigidity of the Gauss–Codazzi–Ricci equations and isometric immersions of Riemannian manifolds with lower regularity, **J. Geom. Anal.** 28 (2018), 1957–2007.
 3. **S. Li**, On one-dimensional compressible Navier–Stokes equations for a reacting mixture in unbounded domains, **Z. Angew. Math. Phys.** 68 (2017), 106–127.
 4. **S. Li**, Dimension reduction of compressible fluid models over product domains, **J. Differential Equations** 266 (2019), 87–113.
 5. **S. Li**, On vortex alignment and boundedness of L^q -norm of vorticity in incompressible viscous fluids, under minor revision with **Acta Math. Scientia** (2019), ArXiv: 1712.00551.
 6. **S. Li**, On the existence of $C^{1,1}$ -isometric immersions of several classes of negatively curved surfaces into \mathbb{R}^3 , to appear in **Arch. Ration. Mech. Anal.** (2020), DOI: <https://doi.org/10.1007/s00205-019-01472-8>.

7. **S. Li**, Geometric regularity criteria for incompressible Navier–Stokes equations with Navier boundary conditions, **Nonlinear Anal.** 188 (2019), 202–235.
8. **S. Li**, A remark on the non-compactness of $W^{2,d}$ -immersions of d -dimensional hypersurfaces, to appear in **Proc. Amer. Math. Soc.** (2020), DOI: <https://doi.org/10.1090/proc/14710>.
9. **S. Li**, A note on generic transversality of Euclidean submanifolds, to appear in **Manuscripta Math.** (2020), DOI: <https://doi.org/10.1007/s00229-019-01114-z>.
10. **S. Li**, Counterexamples to the L^p -Calderón–Zygmund estimate on open manifolds, to appear in **Ann. Glob. Anal. Geom.** (2020), DOI: <https://doi.org/10.1007/s10455-019-09688-3>.
11. **S. Li**, Towards a theory of multi-parameter geometrical variational problems: fibre bundles, differential forms, and Riemannian quasiconvexity, to appear in **Quart. Appl. Math.** (2020), DOI: <https://doi.org/10.1090/qam/1557>.
12. **S. Li**, J. Wu, and K. Zhao, On the degenerate Boussinesq equations on surfaces, to appear in **J. Geom. Mech.** (2020), DOI: 10.3934/jgm.2020006.
13. **S. Li** and M. Slemrod, From the Nash–Kuiper theorem to the Euler equations on fluid dynamics, ArXiv preprint (2018): 1811.01505.
14. G.-Q. Chen and **S. Li**, Weak continuity of Cartan’s structural equation on semi-Riemannian manifolds with lower regularity, under revision with **J. Geom. Anal.** (2019), ArXiv preprint: 1905.02661.
15. **S. Li** and A. Schikorra, $W^{s, \frac{n}{s}}$ -maps with positive distributional Jacobians, submitted to **Ann. l’Inst. Henri Poincaré C, Analyse Non Linéaire** (2019), ArXiv preprint: 1905.07338.
16. **S. Li**, Stability of minimising harmonic maps under $W^{1,p}$ -perturbations of boundary data: $p \geq 2$, submitted to **J. Differential Equations** (2019), ArXiv preprint: 1810.10599.
17. **S. Li**, A note on Alberti’s Luzin-type theorem for gradients, submitted to **Ricerche Mat.** (2019), ArXiv preprint: 1910.02537.
18. **S. Li**, Cartan–Whitney presentation, non-smooth analysis and smoothability of manifolds: on a theorem of Kondo–Tanaka, ArXiv preprint: 1904.00515.
19. X. Meng, J. K. Taylor, **S. Li**, and S. B. Taieb, Scoring functions for multivariate distributions and level sets, submitted to **J. Amer. Stat. Soc.** (2019).
20. **S. Li** and X. Zheng, A generalization of Lemma 1 in Kotlarski (1967), online preprint. DOI: 10.13140/RG.2.2.19382.04162.
21. G. Dafni and **S. Li**, Nečas inequality, inverse of divergence, and div-curl lemma on open manifolds, ongoing (2019).
22. R. Hardt and **S. Li**, General axially symmetric harmonic maps, ongoing (2019).
23. G.-Q. Chen, **S. Li**, and M. Slemrod, Remarks on asymptotic rigidity and continuity problems in the intrinsic approach to nonlinear elasticity, ongoing (2019).
24. G.-Q. Chen and **S. Li**, Compensated compactness in Banach spaces and weak rigidity of isometric immersions of manifolds, in: **Nonlinear partial differential equations, mathematical physics, and stochastic analysis** (Helge Holden’s 60th birthday volume), pp.73–95, EMS Ser. Congr. Rep., Eur. Math. Soc., Zürich, 2018.

INVITED TALKS AND VISITS

Sep. 2020	Workshop on generalised convexity and integral geometry, Prague, Czechoslovakia
Jun. 2020	Special session on conservation laws and fluid dynamics, AIMS Conference, USA
Mar. 2020	Conference in celebration of Robert Hardt, USA
Dec. 2019	Special seminar, Durham University, UK
Nov. 2019	Speical seminar, Warwick University, UK
Nov. 2019	OxPDE special seminar, University of Oxford, UK
Oct. 2019	Tulane University, USA
Sep. 2019	Geometry and analysis seminar, Rice University, USA
Apr. 2019	Geometric analysis seminar, McGill University, Canada
Feb. 2019	Analysis seminar, Université Laval, Canada
Nov. 2018	PDE seminar, University of Oxford, UK
Oct. 2018	Analysis and PDE seminar, Heriot-Watt University, Scotland, UK
Oct. 2018	Analysis seminar, University of South Carolina, USA
Oct. 2018	Geometry and analysis seminar, Rice University, USA
Jun. 2018	SIAM sectional meeting, Louisiana State University, USA
Jun. 2018	Canadian Mathematical Society sectional meeting, Fredericton, Canada
Mar. 2018	PDE Workshop, Pittsburgh University, USA
Mar. 2018	OxPDE Lunchtime seminar, University of Oxford, UK
Feb. 2018	Analysis seminar, Tulane University, USA
Oct. 2017	Analysis seminar, University of Houston, USA
Sep. 2017	Geometry and analysis seminar, Rice University, USA
Jun. 2017	Harmonic analysis seminar, Concordia University, Canada
Jun. 2017	CRM Seminar, McGill University, Canada
Mar. 2016	City University of Hong Kong, China
Feb. 2016	PDE seminar, University of Oxford, UK
Aug. 2016	International workshop on hyperbolic PDE, Chinese Academy of Sciences, China
Aug. 2015	International workshop on hyperbolic PDE, Chinese Academy of Sciences, China
May 2015	“CAKE” seminar in analysis, University of Cambridge, UK
Mar. 2015	Annual OxBridge conference on PDE, University of Oxford, UK
Mar. 2015	International conference on PDE, Pittsburgh University, USA
Feb. 2015	Junior topology and geometry seminar, University of Oxford, UK

HONOURS AND AWARDS

Oct. 2019	AMMSC Komolgorov–Wiener Prize for Young Researchers, Waterloo, Canada
Oct. 2018	SIAM travel award, USA
May 2014, 15, 16	Keble Association Study Award, University of Oxford, UK
2017 – 2019	CRM–ISM postdoctoal fellowship, Montreal, Canada
May 2013	Phi Beta Kappa, Columbia University Chapter, New York, USA
2011–2012	OxBridge Scholarship, Columbia University, New York, USA

TEACHING EXPERIENCE

Spring 2020	Lecturer for Complex analysis (graduate) and ODE
Fall 2019	Lecturer for Calculus III
Spring 2018	Lecturer for Riemannian geometry (graduate) and ODE
Fall 2018	Lecturer for Calculus I
Trinity 2017	Tutor for Hyperbolic PDE (graduate); Prelims Analysis III, Prelims Probability; Part A Probability, and Part A Integration
Hilary 2017	Tutor for Part A Integration
Michaelmas 2016	Tutor for Prelims Analysis I, Prelim Probability; Part A Probability Part A Integral transforms, and Introduction to PDE (graduate)
Trinity 2016	Tutor for Part A Calculus of variations, Part A Probability, Prelims Analysis; Tutor for Hyperbolic PDEs (graduate)
Hilary 2016	Tutor for Prelims Multivariate calculus
Trinity 2015	Tutor for Part C Functional analysis and Hyperbolic PDE (graduate)
Hilary 2015	Tutor for Prelims Fourier analysis and PDE, Prelims Multivariate calculus, and Part A Differential equations
Michaelmas 2014	TA for Part C Functional analysis; tutor for Part A Probability
Hilary 2014	TA for Part B Hilbert spaces
Michaelmas 2013	TA for Part B Banach spaces and Martingale through measure theory
Spring 2013	Undergraduate TA for Introduction to modern analysis
Fall 2012	Undergraduate TA for ODE

PROFESSIONAL SERVICE

- Referee for Analysis (Berlin), Journal of Physics A, and Quarterly Journal of Mechanics and Applied Mathematics
- Advance examination committee (with Prof. Robert Hardt) for Mr. Asghir Varfell, Rice University
- Co-supervisor for master project of Mr. Tianyu Wu, University College London
- Co-organiser of special session at AMS Sectional Meeting, Medford, March 2020

OTHER PROFESSIONAL AND OUTREACH EXPERIENCES

2019–2020	Chair of colloquium committee, Maths Dept., Rice University
2019	Guest lecturer at Lanier Middle School, Texas, USA
2018	Judge for Rice Undergraduate research symposium
2017–18	Mentor for Rice geometry lab (undergraduate research)
2017–18	Committee for current mathematics seminar (graduate seminar), Rice University
2016	Interview Panel for undergraduate admissions, Oriel College, University of Oxford

RESEARCH AREAS

- Mathematical analysis and partial differential equations
- Geometric analysis and global analysis
- Geometric measure theory and calculus of variations
- Applied mathematics (in particular, continuum mechanics and statistics)

REFERENCES

Gui-Qiang Chen (<i>D. Phil.</i> supervisor, University of Oxford)	Gui-Qiang.Chen@maths.ox.ac.uk
Constantine Dafermos (Brown University)	Constantine_Dafermos@Brown.edu
Pengfei Guan (McGill University)	pengfei.guan@mcgill.ca
Robert Hardt (postdoctoral mentor, Rice University)	hardt@math.rice.edu
Zhongmin Qian (University of Oxford)	Zhongmin.Qian@maths.ox.ac.uk
Marshall Slemrod (University of Wisconsin–Madison)	slemrod@math.wisc.edu