

Martin Man-chun Li

Department of Mathematics
The Chinese University of Hong Kong
Rm 236, Lady Shaw Building
Shatin, N.T., Hong Kong

Phone: +852 3943-1851
Email: martinli@math.cuhk.edu.hk
Homepage: <http://www.math.cuhk.edu.hk/~martinli/>
Nationality: Hong Kong, China

Academic Appointments

2020 - now	Associate Professor	The Chinese University of Hong Kong
2014 - 2020	Assistant Professor	The Chinese University of Hong Kong
2013 - 2014	Postdoctoral Fellow	Massachusetts Institute of Technology
2011 - 2013	Postdoctoral Fellow	University of British Columbia

Academic Visits

2015 Spring Massachusetts Institute of Technology

Education

2006 - 2011 Ph.D. in Mathematics, Stanford University (*Thesis advisor: Prof. Richard Schoen*)
2002 - 2006 B.Sc. in Mathematics, The Chinese University of Hong Kong (*First class honors*)

Research Interests

Differential Geometry and Geometric Analysis, Geometric Partial Differential Equations

Awards and Grants

2020 NSFC Excellent Young Scientist Fund (Hong Kong and Macau)
2020 CUHK Direct Grant for Research 2019/20
2019 RGC General Research Fund 2019/20, RGC-14301319
2018 CUHK Direct Grant for Research 2018/19
2017 CUHK Research Summit Series 2017/18
2017 CUHK Direct Grant for Research 2017/18
2015 RGC General Research Fund 2016/17, RGC-14323516
2015 CUHK Direct Grant for Research 2015/16
2014 RGC Early Career Scheme 2015/16, RGC-24305115
2014 CUHK Direct Grant for Research 2014/15
2013 Croucher Foundation Fellowship
2013 Postdoctoral Travel Award at University of British Columbia
2006 Sir Edward Youde Memorial Fellowship

Students and Postdocs Mentored

Xiaoxiang Chai (PhD), Shanjiang Chen (PhD), Chi Fai Chau (MPhil), Yohsuke Imagi (Postdoc)
Current students: Gaoming Wang (PhD), Yizi Wang (MPhil), Yiqi Huang (MPhil), Ho Tin Leung (MPhil)

Publications

Referred Journal Articles

1. M. Li and X. Zhou, *Min-max theory for free boundary minimal hypersurfaces I: regularity theory*. Accepted by **J. Differential Geom.**
2. M. Li and X. Zhou, *A maximum principle for free boundary minimal varieties of arbitrary codimension*, Accepted by **Comm. Anal. Geom.**
3. N. Kapouleas and M. Li, *Free boundary minimal surfaces in the unit three-ball via desingularization of the critical catenoid and the equatorial disk*, **J. Reine Angew. Math.** (2021)
4. Q. Guang, M. Li, Z. Wang and X. Zhou, *Min-max theory for free boundary minimal hypersurfaces II: general Morse index bounds and applications*, **Math. Ann.** (2020)
5. Q. Guang, M. Li and X. Zhou, *Curvature estimates for stable free boundary minimal hypersurfaces*, **J. Reine Angew. Math.** 759 (2020), 245–264
6. M. Li, *Chord shortening flow and a theorem of Lusternik and Schnirelmann*, **Pacific Journal of Math.** 299 (2019), no. 2, 469-488
7. M. Li, *A general existence theorem of embedded minimal surfaces with free boundary*, **Comm. Pure Appl. Math.** 68 (2015), no. 2, 286-331
8. A. Fraser and M. Li, *Compactness of the space of embedded minimal surfaces with free boundary in three-manifolds with nonnegative Ricci curvature and convex boundary*, **J. Differential Geom.** 96 (2014), no. 2, 183-200
9. M. Li, *A sharp comparison theorem for compact manifolds with mean convex boundary*, **J. Geom. Anal.** 24 (2014), no. 3, 1490-1496
10. M. Li, *On complete stable minimal surfaces in 4-manifolds with positive isotropic curvature*, **Proc. Amer. Math. Soc.** 140 (2012), no. 8, 2843-2854

Preprints/In Progress

1. Y. Hu, K. Wu, M. Li, L.-M. Lin and Z. Younsi, *Null geodesics for covariant radiative transfer in dynamical spacetimes: A 4+1 dimensional formulation*. Submitted.
2. S. Hirsch and M. Li, *Contracting convex surfaces by mean curvature flow with free boundary on convex barriers*. Preprint. arXiv:2001.01111

Research reports and surveys

1. M. Li, *Free boundary minimal surfaces in the unit ball: recent advances and open questions*, **Proceedings of the International Consortium of Chinese Mathematicians, 2017 (First Annual Meeting)**, p.401-436, International Press of Boston, Inc. (2020) 654pp.
2. M. Li and X. Zhou, *On minimal surfaces with free boundary*. to appear in **Special Issues of ICCM Notices**

Invited Talks and Seminar

Conference and Colloquium Talks

- 2020 Dec *An Invitation to Geometric Analysis*, Jeonbuk National University (online)
- 2020 Dec *Taiwan International Conference on Differential Geometry*, National Taiwan University *
- 2020 Jun *Conference on Geometric Analysis*, Xi'an *
- 2020 Feb *Workshop and School on Geometric Analysis and Discrete Geometry*, Korea Institute for Advanced Study *
- 2019 Nov *2019 Geometric Analysis Seminar for Young Scholars*, Sun Yat-sen University
- 2019 Jun *Trends in Modern Geometry*, Tsinghua University
- 2019 Jun *The 8th International Congress of Chinese Mathematicians*, Beijing, invited speaker
- 2019 Jan *Tianyuan Forum on Geometry and Analysis*, University of Science and Technology of China
- 2018 Dec *Analysis and Geometry in Minimal Surface Theory*, Gyeongju, Korea
- 2018 Feb *Geometric and Nonlinear Partial Differential Equations Conference*, Australia National University
- 2017 Dec *The first Annual Meeting of International Consortium of Chinese Mathematicians*, Sun Yat-Sen University
- 2017 Nov *MIST 2017 Junior Colloquium*, Institute of Mathematical Sciences, CUHK
- 2017 Oct *Workshop on Geometry, Analysis and Probability*, BICMR, Peking University
- 2017 Sep *The Fourth Taiwan International Conference on Geometry*, National Taiwan University
- 2017 May *Geometry - in honour of Mario Micalef's 60th birthday*, University of Warwick
- 2017 Mar *Mt. Aoba min-max mini-workshop*, Tohoku University
- 2016 Dec *Geometry of Moduli Spaces of Low Dimensional Manifolds*, RIMS, Kyoto University
- 2016 Oct *International Conference for the 70th Anniversary of Korean Mathematical Society*, Seoul National University, invited speaker (trip cancelled due to severe weather)
- 2016 Aug *The 7th International Congress of Chinese Mathematicians*, Beijing, invited speaker
- 2015 Dec *School & Workshop on Geometric Analysis*, Korea Institute for Advanced Study
- 2015 Jul *Warwick-Imperial-Cambridge Geometric Analysis seminar 2015*, Imperial College London
- 2015 Jan *Young Geometric Analysts' Forum*, Tsinghua Sanya International Mathematics Forum
- 2014 Sep *Workshop on Differential Geometry*, The Chinese University of Hong Kong
- 2013 Oct *Mini-workshop on Geometry*, Chinese University of Hong Kong
- 2013 Jun. *Variational Problems and Geometric PDEs*, Universidad de Granada
- 2012 May *Pacific Northwest Geometry Seminar*, University of British Columbia
- 2012 Apr *Graduate Student and Post-doc Workshop on Mean Curvature Flow, Low-dimensional Topology and Related Topics*, Massachusetts Institute of Technology
- 2011 Apr *AMS Spring Western Section Meeting*, Las Vegas, NV
- 2010 Mar *Graduate Students and Post-doc Workshop on Mean Curvature Flows and Related Topics*, Johns Hopkins University

* cancelled due to CoViD-19 outbreak

Seminar Talks

- 2020 Jun *Asia-Pacific Analysis and PDE Seminar* (online)
- 2019 Oct *NCTS Differential Geometry Seminar*, National Taiwan University
- 2019 Jun *Geometric Analysis Seminar*, Beijing Normal University
- 2018 Oct *Geometry and Analysis Seminar*, Columbia University
- 2018 May *Geometric Analysis Seminar*, Xiamen University
- 2018 May *Differential Geometry and Geometric Analysis Seminar*, Nanjing University
- 2018 Apr *Geometric Analysis Seminar*, Yau Mathematical Sciences Center, Tsinghua University
- 2018 Feb *Geometric Analysis and Mathematical Physics Seminar*, University of Copenhagen
- 2017 Aug *Geometric Analysis and Mathematical Physics Seminar*, University of Copenhagen
- 2016 Sep *MIST VII: Workshop on Special Lagrangian and related topics*, CUHK and National Taiwan University
- 2016 May *Joint Workshop*, University of Macau
- 2016 Mar *Geometry-Topology Seminar*, University of Maryland College Park
- 2015 Oct *Informal Geometric Analysis Seminar*, University of Maryland College Park
- 2015 Oct *Analysis and Partial Differential Equations Seminar*, Johns Hopkins University
- 2014 Apr *Seminario de Ecuaciones en Derivadas Parciales*, Pontificia Universidad Católica de Chile
- 2013 Sep *Geometric Analysis Seminar*, Brown University
- 2013 May *Seminario de Ecuaciones en Derivadas Parciales*, Pontificia Universidad Católica de Chile
- 2013 Apr *Geometry Seminar*, Stanford University
- 2013 Mar *Seminar on Pure Mathematics*, Hong Kong University of Science and Technology
- 2013 Feb *Geometry and Analysis Seminar*, Columbia University
- 2013 Feb *Geometric Analysis Seminar*, Massachusetts Institute of Technology
- 2013 Feb *Differential Geometry Seminar*, City University of New York Graduate Center
- 2013 Feb *Analysis and Partial Differential Equations Seminar*, Johns Hopkins University
- 2013 Feb *General Relativity and Geometric Analysis Seminar*, Columbia University
- 2013 Feb *Seminar*, Chinese University of Hong Kong
- 2012 Dec *Seminario Capde*, Pontificia Universidad Católica de Chile
- 2011 Nov *Differential Geometry, Mathematical Physics, PDE Seminar*, University of British Columbia
- 2011 Oct *Differential Geometry Seminar*, University of California, Santa Barbara
- 2011 Feb *Geometry and Physics Seminar*, University of Miami
- 2011 Jan *General Relativity Seminar*, Columbia University
- 2008 Dec *IMS/CUHK Seminar*, Chinese University of Hong Kong

Services

Conference/workshops organized

- MIST 2019 Workshop on Geometric Analysis, Algebraic Geometry and Symplectic Geometry (Feb 21- Mar 4, 2019)
- MIST 2018: Symposium on Geometric Analysis (Feb 3-5, 2018)
- Workshop on Geometric Analysis and General Relativity (Jan 12-16, 2018)
- MIST VII: Workshop on Special Lagrangian and related topics (Sep 10, 2016)
- Hong Kong Geometry Colloquium (Sep 10, 2016)
- Distinguished Lecture Series and Workshop on Geometric Analysis (Jun 21-23, 2016)
- Mini-workshop on Differential Geometry (Dec 9, 2014)

Referee for journal

- American Journal of Mathematics
- Calculus of Variations and Partial Differential Equations
- Commentarii Mathematici Helvetici
- Communications in Analysis and Geometry
- Communications in Contemporary Mathematics
- Geometry & Topology
- International Mathematics Research Notices
- Inventiones Mathematicae
- Journal of the American Mathematical Society
- Journal of Differential Geometry
- Journal of Geometric Analysis
- Journal of the Korean Mathematical Society
- Manuscripta Mathematica
- Mathematische Annalen
- Mathematische Nachrichten
- Proceedings of the American Mathematical Society
- New York Journal of Mathematics
- Transactions of the American Mathematical Society

Reviewer

- MathSciNet: 2013 to present
- Swiss National Science Foundation: 2017

Administrative services

- Co-organizer of MATH-IMS Joint Colloquium Series (Pure Mathematics) 2020–
- Department Committee on First Year Mathematics Honours Scheme 2019–
- Department Undergraduate Curriculum Committee (Analysis) 2019–
- Officers of the Executive Committee of New Asia College Staff Association 2018 – 2019
- Assistant Professor Representative, Board of the Faculty of Science 2017 – 2019
- Faculty Task Force on Public Image Building 2017 –
- Department Scholarship Committee 2016 – 2017
- Department Staff-Student Consultative Committee 2015 –
- Faculty External Relation Committee 2015 – 2016
- Department Alumni Affair Committee 2014 – 2015
- Department Committee on Out-Reach and External Relation 2014 – 2017

Teaching Experience

Chinese University of Hong Kong

- MATH 6021: Topics in Geometry I, Fall 2020
- MATH 5061: Riemannian Geometry I, Spring 2020, Spring 2021
- MATH 2050: Mathematical Analysis I, Spring, 2019, Spring 2020, Spring 2021
- MATH 4030: Differential Geometry, Fall 2015, Fall 2016, Fall 2017, Fall 2019
- MATH 4900: Capstone Seminar, Fall 2018
- MATH 1030: Linear Algebra I, Spring 2017, Spring 2018
- GENA 1113: Student-oriented Teaching and Seminar, Spring 2017, Spring 2021
- MATH 2040: Linear Algebra II, Spring 2016, Fall 2016, Fall 2017
- MATH 1010: University Mathematics, Fall 2014
- MATH 2010: Advanced Calculus I, Fall 2014

Massachusetts Institute of Technology

- MATH 18.02: Calculus, Winter 2013 (recitation leader)

University of British Columbia

- MATH 317: Calculus IV, Winter 2013, Summer 2013
- MATH 153: Linear Systems, Winter 2012

Stanford University (as teaching/course assistants)

- MATH 53H: Honors Multivariable Mathematics, Spring 2011
- MATH 52: Integral Calculus of Several Variables, Winter 2011
- MATH 51: Linear Algebra and Multivariable Calculus, Winter 2008, Winter 2009, Spring 2010
- MATH 131P: Partial Differential Equations, Winter 2010
- MATH 174A: Topics in Differential Equations and Analysis, Winter 2007