

## Martin Man-chun Li

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### 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

2022 RGC General Research Fund 2022/23, RGC-14305122  
2021 Hong Kong Mathematical Society Young Scholar Award  
2021 RGC General Research Fund 2021/22, RGC-14304121  
2021 CUHK Faculty Exemplary Teaching Award 2019/20  
2020 NSFC Excellent Young Scientist Fund (Hong Kong and Macau)  
2020 RGC General Research Fund 2020/21, RGC-14304120  
2019 RGC General Research Fund 2019/20, RGC-14301319  
2017 CUHK Research Summit Series 2017/18  
2015 RGC General Research Fund 2016/17, RGC-14323516  
2014 RGC Early Career Scheme 2015/16, RGC-24305115  
2013 Croucher Foundation Fellowship  
2013 Postdoctoral Travel Award at University of British Columbia  
2006 Sir Edward Youde Memorial Fellowship

### Students and Postdocs Mentored

PhD: Xiaoxiang Chai (2018), Shanjiang Chen (2020), Gaoming Wang (2022), Yizi Wang (on-going)  
MPhil: Chi Fai Chau (2017), Yiqi Huang (2022), Ho Tin Leung (2022)  
Postdoc: Yohsuke Imagi (2017-18)

## Publications

### Referred Journal Articles

1. M. Li and X. Zhou, *A maximum principle for free boundary minimal varieties of arbitrary codimension*, **Comm. Anal. Geom.** 29 (2021), no. 6, 1509–1521
2. M. Li and X. Zhou, *Min-max theory for free boundary minimal hypersurfaces I: regularity theory*, **J. Differential Geom.** 118 (2021), no. 3, 487–553
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.** 776 (2021), 201–254
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.** 379 (2021), 1395–1424
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*. preprint available on arXiv

## Invited Talks and Seminar

### Conference and Colloquium Talks

2022	Dec	<i>The 2022 Pacific Rim Mathematical Association Congress</i> , Vancouver
2022	Oct	<i>The 2022 Global Korean Mathematical Society International Conference</i> , Korea (hybrid)
2022	Sep	<i>The second Geometric Analysis: Past, Present and Future</i> , Jeonbuk National University (online)
2020	Dec	<i>An Invitation to Geometric Analysis</i> , Jeonbuk National University (online)
2020	Dec	<i>Taiwan International Conference on Differential Geometry</i> , National Taiwan University *
2020	Jun	<i>Conference on Geometric Analysis</i> , Xi'an *
2020	Feb	<i>Workshop and School on Geometric Analysis and Discrete Geometry</i> , Korea Institute for Advanced Study *
2019	Nov	<i>2019 Geometric Analysis Seminar for Young Scholars</i> , Sun Yat-sen University
2019	Jun	<i>Trends in Modern Geometry</i> , Tsinghua University
2019	Jun	<i>The 8th International Congress of Chinese Mathematicians</i> , Beijing, invited speaker
2019	Jan	<i>Tianyuan Forum on Geometry and Analysis</i> , University of Science and Technology of China
2018	Dec	<i>Analysis and Geometry in Minimal Surface Theory</i> , Gyeongju, Korea
2018	Feb	<i>Geometric and Nonlinear Partial Differential Equations Conference</i> , Australia National University
2017	Dec	<i>The first Annual Meeting of International Consortium of Chinese Mathematicians</i> , Sun Yat-Sen University
2017	Nov	<i>MIST 2017 Junior Colloquium</i> , Institute of Mathematical Sciences, CUHK
2017	Oct	<i>Workshop on Geometry, Analysis and Probability</i> , BICMR, Peking University
2017	Sep	<i>The Fourth Taiwan International Conference on Geometry</i> , National Taiwan University
2017	May	<i>Geometry - in honour of Mario Micalef's 60th birthday</i> , University of Warwick
2017	Mar	<i>Mt. Aoba min-max mini-workshop</i> , Tohoku University
2016	Dec	<i>Geometry of Moduli Spaces of Low Dimensional Manifolds</i> , RIMS, Kyoto University
2016	Oct	<i>International Conference for the 70th Anniversary of Korean Mathematical Society</i> , Seoul National University, invited speaker (trip cancelled due to severe weather)
2016	Aug	<i>The 7th International Congress of Chinese Mathematicians</i> , Beijing, invited speaker
2015	Dec	<i>School &amp; Workshop on Geometric Analysis</i> , Korea Institute for Advanced Study
2015	Jul	<i>Warwick-Imperial-Cambridge Geometric Analysis seminar 2015</i> , Imperial College London
2015	Jan	<i>Young Geometric Analysts' Forum</i> , Tsinghua Sanya International Mathematics Forum
2014	Sep	<i>Workshop on Differential Geometry</i> , The Chinese University of Hong Kong
2013	Oct	<i>Mini-workshop on Geometry</i> , Chinese University of Hong Kong
2013	Jun.	<i>Variational Problems and Geometric PDEs</i> , Universidad de Granada
2012	May	<i>Pacific Northwest Geometry Seminar</i> , University of British Columbia
2012	Apr	<i>Graduate Student and Post-doc Workshop on Mean Curvature Flow, Low-dimensional Topology and Related Topics</i> , Massachusetts Institute of Technology
2011	Apr	<i>AMS Spring Western Section Meeting</i> , Las Vegas, NV
2010	Mar	<i>Graduate Students and Post-doc Workshop on Mean Curvature Flows and Related Topics</i> , 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, Annals of Global Analysis and Geometry, Calculus of Variations and Partial Differential Equations, Commentarii Mathematici Helvetici, Communications in Analysis and Geometry, Communications in Contemporary Mathematics, Geometriae Dedicata, Geometry & Topology, International Mathematics Research Notices, Inventiones Mathematicae, Journal of the American Mathematical Society, Journal of Differential Geometry, Journal of Functional Analysis, Journal of Geometric Analysis, Journal of the Korean Mathematical Society, Manuscripta Mathematica, Mathematische Annalen, Mathematische Nachrichten, Pacific Journal of Mathematics, Proceedings of the American Mathematical Society, New York Journal of Mathematics, Transactions of the American Mathematical Society

### External Services

- Moderator for Masterminds, Masterclasses in the prelude to the inaugural Hong Kong Laureate Forum (2021)
- Invited speaker for Science Exposition in the prelude to the inaugural Hong Kong Laureate Forum (2021)
- Outreach talks at Sha Tin Government Secondary School (2021), True Light College (2020)
- Geometry and Topology Panel of S.-T. Yau College Student Mathematics Contest (2020)
- Interpreter for Shaw Prize Committee in Mathematical Sciences (2017)
- Reviewer on MathSciNet (2013 to present), zbMATH (2022 to present)
- Reviewer for Swiss National Science Foundation
- External thesis committee: Han Hong (2021)

### Administrative services

#### *Department*

- Department Level II Academic Advisor (Chairman for Ug) 2022–
- Committee on Teaching Assignment and Time-tabling (Chairman) 2022–
- Department Admission Committee (JUPAS) 2021–
- 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 and Geometry) 2019–
- MATH Representative for BMED Program Committee 2021–2022
- Department Scholarship Committee 2016 – 2017
- Department Staff-Student Consultative Committee 2015 – 2022
- Department Alumni Affair Committee 2014 – 2015
- Department Committee on Out-Reach and External Relation 2014 – 2017

#### *Faculty*

- Faculty Committee on Academic Advising 2022–
- Faculty Task Force on Public Image Building 2017 –
- Assistant Professor Representative, Board of the Faculty of Science 2017 – 2019
- Faculty External Relation Committee 2015 – 2016

#### *College and University*

- Department College Coordinator for New Asia College 2021–
- Officers of the Executive Committee of New Asia College Staff Association 2018 – 2019

## Teaching Experience

### Chinese University of Hong Kong

- MATH 6022: Topics in Geometry II, Spring 2022, Spring 2023
- MATH 2028: Honours Advanced Calculus II, Fall 2021, Fall 2022
- 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, Spring 2022, Spring 2023
- 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