Yang Liu

Date of Birth: 1989–06–26,
Marie-Curie Fellow,
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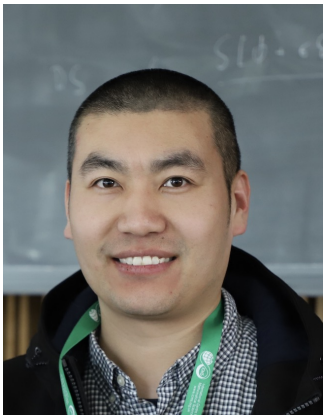

Biography

Dr Yang Liu obtained his Bachelor of science in mathematics and applied mathematics from Zhengzhou University in 2010 and his PhD in applied mathematics from City University of Hong Kong in 2015. Since November 2015, he is part of the Department of Mechanics, School of Mechanical Engineering, Tianjin University as a lecturer (November 2015-June 2019) and then as an associate professor (July 2019-September 2023). In September 2023, he joined the Mathematical Institute, University of Oxford as a Marie Curie Research Fellow, working with **Prof. Alain Goriely FRS**.
His research interests encompass various aspects of mathematical modelling of soft active solids with applications to bio-inspired structure design and elastography of biological tissues. His work covers theoretical analysis, finite element simulations, and experimental investigations. He focuses particularly on pattern formation in soft solids and biological tissues, such as buckling, wrinkling, necking, and bulging. His expertise includes asymptotic analysis with applications to bifurcation analysis and wave propagation in soft elastomers, mechanics-guided metamaterials, and reduced theories such as rod/plate/shell models.
He was awarded the ACRI Fellowship in 2019 and the Marie Słkodowska-Curie Fellowship in 2023.

Reference letter

To claim a recommendation letter, please contact them directly:

1. **Prof. Alain Goriely FRS**, Statutory Professor (Chair) of Mathematical Modelling, ?Director of the Oxford Centre for Industrial Applied Mathematics (OCIAM), Mathematical Institute, University of Oxford. **Email address:** goriely@maths.ox.ac.uk.

2. **Prof. Dominic Vella**, Professor of Applied Mathematics, Mathematical Institute, University of Oxford. **Email address:** dominic.vella@maths.ox.ac.uk.

3. **Prof. Yibin Fu**, Professor of Applied Mathematics, School of Computer Science and Mathematics, Keele University. **Email address:** y.fu@keele.ac.uk.

Research highlights

My research focuses on surface wrinkling in film/substrate bilayers within the context of nonlinear elasticity. By employing asymptotic techniques for multiple small parameters, I derive analytical estimates for the critical buckling load and the associated critical pattern in various scenarios. Notably, I extend the Wentzel-Kramers-Brillouin (WKB) method to solve eigenvalue problems arising from bifurcation analysis in curved and graded structures. Through these systematic investigations, I identify a universal scaling law relating the critical buckling load to the modulus ratio between the two layers. Additionally, by integrating finite element simulations with experimental data, I elucidate the effects of modulus gradient and growth gradient on pattern evolution and transition.

In addition to studying periodic instabilities, my research also addresses localization problems in cylindrical tubes and cylinders. I establish analytical bifurcation conditions for localized bulging and necking in inflated bilayer tubes, graded tubes, and solid cylinders with residual stress. Furthermore, through nonlinear post-buckling analysis, I determine the transition between localized bulging and necking.

I have also derived many reduced models for soft materials, such as a consistent plate theory for moderately thick liquid crystal elastomer plates, a refined model for surface wrinkling of film/substrate bilayers, and a one-dimensional model for localization of cylinders that can capture the initiation, evolution and propagation of localized bulging/necking.

I have published 31 research papers in peer-reviewed journals (12 papers as first author and 10 papers as corresponding author) with high impact in solid mechanics and applied mathematics, such as *Journal of Mechanics and Physics of Solids, Proceedings of the Royal Society A, International Journal of Engineering Science, International Journal of Solids and Structures, Mathematics and Mechanics of Solids*, among others. Additionally, I have successfully acquired three grants as the principal investigator from the highly competitive National Natural Science Foundation of China (NSFC), including two General Program grants and one Young Scientists Fund grant.

Experience

11/09/2023–present, Marie Curie Research Fellow, Mathematical Institute, University of Oxford, Oxford, UK.

30/06/2019–present, Associate Professor; Department of Mechanics, School of Mechanical Engineering, Tianjin University, Tianjin, P. R. China.

25/11/2015–29/06/2019, Lecturer; Department of Mechanics, School of Mechanical Engineering, Tianjin University, Tianjin, P. R. China.

20/06/2019–21/07/2019, ACRI Fellow; Department of Mathematics, Mechanics and Management, Polytechnic University of Bari, Italy.

02/05/2018–30/06/2018, Postdoctoral Fellow; Department of Mathematics, City University of HongKong, Hong Kong, P. R. China.

15/05/2016–15/06/2016, Postdoctoral Fellow; Department of Mathematics, City University of HongKong, Hong Kong, P. R. China.

20/06/2023–19/07/2023, Research Associate; Department of Mathematics, City University of HongKong, Hong Kong, P. R. China.

Education

26/08/2010–15/07/2015, Ph.D Candidate; Department of Mathematics, City University of Hong Kong, Hong Kong, P. R. China.
Supervisor: **Prof. Hui-Hui DAI.**

Thesis: Analytic Studies on Bifurcations of a Hyperelastic Layer-Substrate Structure Under Uniaxial Compression.

01/09/2006–02/07/2010, Undergraduate; Department of Mathematics, Zhengzhou University, Zhengzhou, Henan Province, P. R. China.

Research Interests

Mathematical modelling of active solids.

Non-linear elasticity.

Instabilities and wave propagation in soft solids.

Grants

1. **Principal Investigator**: "Research on force/thermal/light-induced deformation of liquid crystal elastomers based on incremental theory and finite-strain plate/shell models" from National Natural Science Foundation of China, Grant No. 12372072, 2024.1-2027.12. RMB 520000.

2. **Principal Investigator**: " Accurate control of bending and twisting of liquid crystal elastomers with applications to mechanical metamaterial designing" from Tianjin University, 2024XPD-0010, 2024.1-2026.12. RMB 400000.

3. **Principal Investigator**: "Pattern Formation in Soft Materials: Reduced Models and Nonlinear Analysis (SOFT-PATTERN)" Marie Słkodowska-Curie fellowship, UKRI, Grant Ref: EP/Y030559/1, 2023.9.11-2025.9.10. GBP 200511.

4. **Principal Investigator**: "Intelligent analysis of cutterhead and digital tunnelling technique" from China Railway Engineering Equipment Group Co., LTD., 2022.7-2023.7. RMB 550000.

5. **Principal Investigator**: "Post-buckling analysis of soft materials with applications to elastic wave regulations" from National Natural Science Foundation of China, Grant No. 12072227, 2021.1-2024.12. RMB 620000.

6. **Principal Investigator**: "Stability and deformation analysis of thin liquid crystal elastomer film and tube under mechanical loads" from National Natural Science Foundation of China, Grant No. 11602163, 2017.1-2019.12. RMB 220000.

Publications ($*$ denotes corresponding author)

1. **Yang Liu**, Xiang Yu and Luis Dorfmann*. Reduced model and nonlinear analysis of localized instabilities of residually stressed cylinders under axial stretch. *Mathematics and Mechanics of Solids.* 2024, **29(9)**, 1879–1899.

2. **Yang Liu**, Qianqian Ji and Alain Goriely*. Surface wrinkling of a hyperelastic half-space coated by a liquid crystal elastomer film. *International Journal of Solids and Structures.* 2024, **299**, 112895.

3. Michel Destrade, Luis Dorfmann*, **Yang Liu** and Yu-Xin Xie. The impact of Yibin Fu?s work: In recognition of his 60th birthday. *International Journal of Solids and Structures.* 2024, 112879, **298**, 112879.

4. **Yang Liu** and Luis Dorfmann*. Localized necking and bulging of finitely deformed residually stressed solid cylinder. (Invited contribution to Special Issue to Honouring Alain Goriely FRS). *Mathematics and Mechanics of Solids.* 2024, **29(6)**, 1153–1145.

5. Ping-Ping Chai, **Yang Liu**, and Fan-Fan Wang*. Stretch-induced wrinkling of anisotropic hyperelastic thin films. *Thin-Walled Structures.* 2024, **200**, 11196.

6. Rui-Cheng Liu, **Yang Liu*** and Alain Goriely*. Surface wrinkling of a film coated to a graded substrate. *Journal of the Mechanics and Physics of Solids*. 2024, **186**, 105603.

7. Guanpo Liang, Yuxin Fu, **Yang Liu**, Yu-Xin Xie* and Yue-Sheng Wang. Bifurcation and bistability in pneumatically actuated periodically porous elastomers. *Mechanics of Materials.* 2023, **183**, 104687.

8. Ze Ma, **Yang Liu**, Yu-Xin Xie* and Yue-Sheng Wang. Tuning of higher-order topological corner states in a honeycomb elastic plate. 2023, *Physical Review Applied*. 2023, **19**, 054038.

9. **Yang Liu***. Higher order solution to the Euler buckling threshold for compressible hyperelastic bilayers. *Acta Mechanica Sinica.* 2023, **39(8)**, 422379.

10. **Yang Liu***, Liu Yang and Yu-Xin Xie*. Inflation-induced bulge initiation and evolution in graded cylindrical tubes of arbitrary thickness. *Mechanics of Materials.*2023, **178**, 104561.

11. Guan Wang, **Yang Liu**, and Yibin Fu*. A refined model for the buckling of film/substrate bilayers. 2023, **28(1)**, 313–330.

12. Ze Ma, **Yang Liu**, Yu-Xin Xie* and Yue-Sheng Wang. A simple elastic phononic crystal plate with adjustable topological valley transmission paths. *Extreme Mechanics Letters.* 2022, **57**, 101910.

13. Rui-Cheng Liu, Lishuai Jin, Zongxi Cai and **Yang Liu***. An experimental study of morphological formation in bilayered tubular structures driven by swelling/growth. *Mathematics and Mechanics of Solids.* 2022, **27(8)**, 1569–1591.

14. **Yang Liu**, Tian Liang, Yuxin Fu, Yu-Xin Xie* and Yue-Sheng Wang. A novel buckling pattern in periodically porous elastomers with applications to elastic wave regulations. *Extreme Mechanics Letters.* 2022, **54**, 101781.

15. Zhaohui Zhang, Jiameng Li, **Yang Liu** and Yu-Xin Xie*. Nonlinear oscillations of a one-dimensional dielectric elastomer generator system. *Extreme Mechanics Letters.* 2022, **53**, 101718.

16. Rui-Cheng Liu, **Yang Liu*** and Zongxi Cai. Influence of the growth gradient on surface wrinkling and pattern transition in growing tubular tissues. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences.* 2021, **477(2254)**, 20210441.

17. **Yang Liu***, Wendi Ma and Hui-Hui Dai. Bending-induced director reorientation of a nematic liquid crystal elastomer bonded to a hyperelastic substrate. *Journal of Applied Physics*. 2021, **129**(10), 104701. (Editor's Pick).

18. **Yang Liu***, Wendi Ma and Hui-Hui Dai*. On a consistent finite-strain plate model of nematic liquid crystal elastomers. *Journal of the Mechanics and Physics of Solids*. 2020, **145**, 104169.

19. **Yang Liu***, Zhouyu Zhang, Giuseppe Devillanova* and Zongxi Cai. Surface instabilities in graded tubular tissues induced by volumetric growth. *International Journal of Nonlinear Mechanics*. 2020, **127**, 103612. (Invited contribution to Special Issue on"Instability and Bifurcation in Materials and Structures")

20. Yijia Zhao, Xiaojian Li, Ming Zhao, Zhengxian Liu and **Yang Liu***. A modified turbulence model for simulating airflow aircraft cabin environment with mixed convection. *Building Simulation*. 2020, **13**, 665–675.

21. Yang Ye, **Yang Liu** and Yibin Fu*. Weakly nonlinear analysis of localized bulging of an inflated hyperelastic tube of arbitrary wall thickness. *Journal of the Mechanics and Physics of Solids*. 2020, **135**, 103804.

22. Yanjie Cao, Yanan Wang, **Yang Liu*** and Yu-Xin Xie*. Explicit computational model of dielectric elastomeric lenses: erratum. *Optics Express*. 2019, **27(26)**, 37834.

23. Yang Ye, **Yang Liu***, Ali Althobaiti and Yu-Xin Xie*. Localized bulging in an inflated bilayer tube of arbitrary thickness: Effects of the stiffness ratio and constitutive model. *International Journal of Solids and Structures*. 2019, **176–177**, 173–184.

24. Qiang Guo, Jiajuan Dong, **Yang Liu**, Xianghong Xu, Qinghua, Qin and Jianshan Wang*. Macroscopic and microscopic mechanical behaviors of climbing tendrils. *Acta Mechanica Sinica*. 2019, **35(3)**, 702–710 (Journal Cover).

25. **Yang Liu***, Yang Ye, Ali Althobaiti and Yu-Xin Xie*. Prevention of localized bulging in an inflated bilayer tube. *International Journal of Mechanical Sciences*. 2019, **153–154**, 359–368.

26. Lishuai Jin, **Yang Liu*** and Zongxi Cai. Post-buckling analysis on growing tubular tissues: A semi-analytical approach and imperfection sensitivity. *International Journal of Solids and structures*. 2019, **162**, 121–134.

27. Chenyang, Song, Xiao Wang and **Yang Liu***. Stability analysis of an axially compressed hyper-elastic tube with confined boundary. *Chinese Journal of Solid Mechanics*. 2018, **39**(2), 578–587.

28. Lishuai Jin, **Yang Liu*** and Zongxi Cai. Asymptotic solutions on the circumferential wrinkling of growing tubular tissues. *International Journal of Engineering Science*. 2018, **128**, 31–43.

29. **Yang Liu***. Axial and circumferential buckling of a hyperelastic tube under restricted compression. *International Journal of Non-linear Mechanics*. 2018, **98**, 145–153.

30. Yanjie Cao, Yanan Wang, **Yang Liu*** and Yu-Xin Xie*. Explicit computational model of dielectric elastomeric lenses. *Optics Express*. 2017, **25(23)**, 28710–28717.

31. Hui-Hui Dai* and **Yang Liu***. Critical thickness ratio for buckled and wrinkled fruits and vegetables. *Europhysics Letters*. 2014, **108**(4), 44003 (editor's choice and highlighted article).

32. **Yang Liu** and Hui-Hui Dai*. Compression of a layer-substrate structure: Transitions between buckling and surface modes. *International Journal of Engineering Science*. 2014, **80**, 74–89.

33. Shihui Fu*, Hongjun Wei and **Yang Liu**. Complete synchronization of chaotic systems with bidirectional coupling. *Journal of Zhengzhou University (Natural Science Edition)*. 2012, **44**(3), 29–33.

Authorized Patents

1. **Yang Liu**, Rui-Cheng Liu, Lishaui Jin, Zongxi Cai. Mould and fabrication methodology of two-layer tubular soft materials. No. CN202010321178.1 (Authorized on 07/12/2021).

2. **Yang Liu**, Tian Liang, Yu-Xin Xie. Mould and fabrication methodology of periodically porous rubber materials with inner surface coating. No. CN202110597787.4. (Authorized on 09/12/2022).

Ph.D supervision

Zhenwei Liu, from September 2022–present

Rui-Cheng Liu (co-supervised with Prof. Zongxi Cai), from September 2019–present

Lishuai Jin (co-supervised with Prof. Yibin Fu and Prof. Zongxi Cai), from September 2016–July 2020.

Master supervision

Zhouyu Zhang, from September 2017–June 2020, Thesis: Theoretical and numerical studies on growth-induced surface instabilities in graded tubular tissues, June 2020;

Wendi Ma (awarded to the National Scholarship for Postgraduates 2020), from September 2018–March 2021, Thesis: Research on bending deformation and consistent plate theory of nematic liquid crystal elastomers (selected as Excellent Master Thesis of Tianjin University 2021 and Excellent Master Thesis of Tianjin city 2022), March 2021;

Dinesh Sharma, from September 2018–December 2021, Thesis: Finite element simulations of compression induced instabilities in a two-layer structure composed of hyperelastic materials, December 2021;

Yinggang Shen, from September 2019–March 2022, Thesis: TBM construction geological identification algorithm based on rock machine coupling, March 2022;

Tian Liang, from September 2019–May 2022, Thesis: Research on buckling instability and bandgaps in periodically porous elastomers with pore coating, May 2022;

Xinyu Liu, from September 2020–May 2023, Thesis: Research on structure optimization of the cutterhead of composite shield machines based on parameterized modelling method, May 2023;

Liu Yang, from September 2020–May 2023, Thesis: Instability analysis of inflated soft tubes with modulus gradient, torsion and surface tension, May 2023;

Wanyu Ma, from September 2021–present;

Qianqian Ji, from September 2021–present;

Chongqing Li, from September 2022–present.

Finial-year project

Yang Ye, 2017;

Rui-Cheng Liu, 2019 (selected as an excellent project);

Yang Lu and Minghao Zhang, 2020;

Chongqing Li and Hao Yuan, 2022;

Yu Zhou, 2023 (selected as an excellent project).

Editorial board

Young Editor, Chinese Journal of Applied Mechanics. January 2021-present.

Guest Editor, International Journal of Solids and Structures.Special issue "Nonlinear Continuum Theories: Dedicated to Yibin Fu", 2024.

Journal reviewer

Advances in Manufacturing

Acta Mechanica Sinica

ASME Journal of Applied Mechanics

Bio-Design and Manufacturing

Chinese Journal of Applied Mechanics

Chinese Journal of Theoretical and Applied Mechanics

Electronics

Extreme Mechanics Letters

Journal of Applied Physics

Journal of Experimental Mechanics

Journal of Mechanics of Material and Structures

International Journal of Mechanical Sciences

International Journal of Non-linear Mechanics

International Journal of Nonlinear Analysis and Applications

International Journal of Solids and Structures

Mathematics

Mathematics and Mechanics of Solids

Mechanics of Materials

Mechanics of Soft Materials

Micromachines

Optics Express

Philosophical Transactions of the Royal Society A

Proceedings of the Royal Society A

Sensors

SIAM Journal on Applied Mathematics

Thin-Walled Structures

Conference Organization

1. **Session organizer;** The Engineering Science Medal Symposium in 2024 SES Annual Technical Meeting, 20 August 2023 – 23 August 2024, Hangzhou, China, (with Prof. Arash Yavari and Prof. Yibin Fu).

2. **Conference secretary;** Recent Advances in Continuum Mechanics and Applied Mathematics: An International Conference in Memory of Prof. Hui-Hui Dai, 16 June 2023 – 18 June 2023, Tianjin, China, (with Prof. Weiqiu Chen, Prof. Yibin Fu, Prof. Zheng Zhong,

and Dr. Yu-Xin Xie).

Talks and Presentations

1. **Invited talk;** Applied and Computational Mathematics Seminars, Aarhus University, November 1, 2024, Aarhus, Denmark. *Title: A mechanical model for elephant trunk wrinkles*.
2. **Invited talk;** Applied and Computational Mathematics Seminars, Cardiff University, October 1, 2024, Cardiff, UK. *Title: Surface wrinkling in film/substrate bilayers*.
3. **Oral talk;** 2024 SES Annual Technical Meeting, August 20-23, 2024, Hangzhou, China. *Title: Localized instabilities of a residually stressed solid cylinder under stretch* .
4. **Invited talk;** 2024 SES Annual Technical Meeting, August 20-23, 2024, Hangzhou, China. *Title: Instabilities of film/substrate bilayers* .
5. **Invited talk;** International Workshop on "The coupled nonlinear continuum theory horizon", July 1-5, 2024, Castro Urdiales, Spain. *Title: Surface instabilities of a half-space coated by a liquid crystal elastomer film*.
6. **Oral talk;** British Liquid Crystal Society Annual Meeting 2024, April 10-12 2024, Oxford, UK. *Title: Surface instabilities of a half-space coated by a liquid crystal elastomer film*.
7. **Invited talk;** Nonlinear Elasticity: Modelling of multi-physics and applications, March 25-28 2024, Edinburgh, UK. *Title: Surface wrinkling in film/substrate bilayers: Influence of material inhomogeneity and anisotropy*.
8. **Invited talk;** 16 July, 2023. *Title: Pattern formation in soft materials: Reduced models and localized instabilities*, Chinese University of Hong Kong, Shenzhen, Shenzhen, China.
9. **Invited talk;** 8 July, 2023. *Title: Asymptotic analysis of instability and reduced modes of soft materials*, South China University of Technology, Guangzhou, China.
10. **Invited talk;** 5 July, 2023. *Title: Asymptotic analysis of instability and reduced modes of soft materials*, Harbin Institute of Technology (Shenzhen), Shenzhen, China.
11. **Oral talk;** International Conference on Applied Mathematics 2023, 30 May - 3 June Hong Kong, China, 2023. *Title: Localized necking and bulging of finitely deformed residually stressed solid cylinder*.
12. **Oral talk;** The 29th International Conference on Computational & Experimental Engineering and Sciences, May 26-29, Shenzhen, Guangdong, China, 2022. *Title: Localized necking and bulging of finitely deformed residually stressed solid cylinder*.
13. **Invited talk;** 26 May 2023. *Title: Periodic instability and localization in soft materials*, Southern University of Science and Technology, Shenzhen, China.
14. **Poster;** 2023 International Conference on Intelligent Material Design (ICIMD 2023), April 28-30, Hangzhou, Zhejiang, China, 2023. *Title: Buckling and wave propagation of periodically porous elastomers*.

15. **Poster;** The first Forum on Inter-disciplinary Research in Frontier of Mechanics, April 21-23, Nanjing, Jiangsu, China, 2023. *Title: Soft periodically porous metamaterials with pore coatings (selected as an excellent poster)*.

16. **Oral talk;** The 32nd International Conference on Adaptive Structures and Technologies, Taicang, Suzhou, China, November 27-30, 2022. *Title: A novel buckling pattern in periodically porous elastomers with applications to elastic wave regulations*.

17. **Oral talk;** Chinese Congress of Theoretical and Applied Mechanics 2021+1, Tencent Meeting, November 5-10, 2022. *Title: Consistent plate equation of liquid crystal elastomers and bending-induced instability*.

18. **Oral talk;** Fifth International Conference on Recent Advances in Nonlinear Mechanics (RANM2021+1), October 22-25, Hangzhou, Zhejiang, China, 2022. *Title: Pattern formation in growing tubular tissues: effect of material or growth inhomogeneity*.

19. **Invited talk;** September 24, 2022. Forum of young scholars of solids mechanics, Tencent Meeting, *Title: Localized instability in soft tubular structures*.

20. **Invited talk;** June 15 2022. Forum of Ji Xia Feng of Shandong University, , *Title: Growth-induced pattern formation and localized instabilities in soft tubular structures*, Tencent Meeting.

21. **Invited presentation;** November 18, 2021. School of Mathematics, Huazhong University of Science and Technology, *Title: Selected topics of applications of applied mathematics in soft matter mechanics*, Tencent Meeting.

22. **Oral talk;** 16th National Conference of Physical Mechanics, Tencent Meeting, August 14-15, 2021. *Title: New plate equation of liquid crystal elastomers and bending-induced instabity*.

23. **Oral talk;** 2nd International Conference on Mechanics of Advanced Materials and Structures, Nanjing, China, October 19-22, 2019. *Title: Study of aneurysm formation as a bifurcation problem in inflated bilayer tubes*.

24. **Oral talk;** Mechanics Forum of Five Universities 2019, Chengdu, China, September 21, 2019. *Title: Analytic studies on instabilities of tubular tissues*.

25. **Invited talk;** Two nonlinear days in Urbino 2019, Urbino, Italy, July 11-12, 2019. *Title: Asymptotic studies on growing tubular tissues*.

26. **Poster presentation;** The 1st National Congress on Soft Mechanics, Hangzhou, China, November 18-20, 2018. *Title: Analytic studies on buckling and post-buckling solutions in growing tubular tissues*.

27. **Oral talk;** Engineering Mechanics Institute International Conference 2018, Shanghai, China, November 2-4, 2018. *Title: Asymptotic studies on growing tubular tissues*.

28. **Oral talk;** The 10th European Solid Mechanics Conference, Bologna, Italy, July 2-6, 2018. *Title: Post-buckling analysis of growing tubular bilayer tissues: semi-analytical solution and experiment*.

29. **Oral talk;** International Conference on Applied Mathematics 2018, HongKong, China, June 5-8, 2018. *Title: Asymptotic analysis concerning the circumferential wrinkling of growing tubular tissues*.

30. **Oral talk;** Chinese Congress of Theoretical and Applied Mechanics 2017, Beijing, China, August 13-16, 2017. *Title: Localized bulging in an inflated hyperelastic bilayer tube of arbitrary thickness*.

31. **Poster;** 24th International Congress of Theoretical and Applied Mechanics, Montreal, Canada, August 21-26, 2016. *Title: Post-buckling analysis of a hyperelastic layer-substrate structure under compression*.

32. **Oral talk;** 17th U.S. National Congress on Theoretical & Applied Mechanics, Michigan State University, East Lansing, Michigan, US, June 15-20, 2014. *Title: Mode transitions of a hyperelastic layer-substrate structure under compression with applications to buckled and wrinkled fruits and vegetables*.

33. **Oral talk;** CityU-SCUT Joint Workshop on Applied Mathematics, Hong Kong, China, November 22, 2013. *Title: Bifurcation analysis of a hyperelastic layer-substrate structure with applications to buckled and wrinkled vegetables and fruits*.

Teaching

2024-2025, Oriel College, University of Oxford,
Tutor, Prelims Dynamics.

March 2021-present, Tianjin University,
Undergraduate course: Mechanics of Materials.

March 2021-present,Tianjin University,
Undergraduate course: Advanced Elasticity.

September 2018-present, Tianjin University,
Undergraduate course: Engineering Mechanics.

June 2016-present.
Postgraduate course: Continuum Mechanics (in English).

September 2011-August 2014, City University of Hong Kong
Teaching Assistant (in English), including tutorial lectures and assignments grading.

Honors and Awards

1. Awardee of Cultivating leading innovative talents in science and technology of Tianjin University 'Climbing Plan' 2023.

2. Marie Skłodowska-Curie Fellowship 2023 (granted by EU but funded by UKRI due to 'Brexit')
3. Excellent advisor for master's thesis of Tianjin City in 2022
4. Excellent advisor for master's thesis of Tianjin University in 2021
5. Excellent faculty of Department of Mechanics in 2020
6. Excellent advisor for undergraduate's final year project in 2019
7. Excellent faculty of Department of Mechanics in 2018
8. ACRI "YOUNG INVESTIGATOR TRAINING PROGRAM 2018" fellowship
9. 2018 Zhi-Kang Shen Award of Tianjin University
10. 2010-2014, Postgraduate Studentship (by UGC-allocated funds), City University of Hong Kong.
11. 2010, First-honor class graduate.
12. 2008-2009, National Scholarship.
13. 2007-2008, First-class Scholarship of Zhengzhou University.
14. 2006-2007, Second-class Scholarship of Zhengzhou University.