

Curriculum Vitae

Professor Yang-Hui He

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https://en.wikipedia.org/wiki/Yang-Hui_He

ACADEMIC POSITIONS

CURRENT

- 2021- Fellow, **London Institute for Mathematical Sciences (LIMS)**,
Royal Institution of Great Britain, London
- 2005- Tutor and Lecturer in Mathematics, Merton College
University of Oxford, UK

HONOURARY

- 2023- Visiting Professor of Mathematics, City, **University of London**
- 2010- Chang Jiang Endowed Chair Professor of Mathematical Physics,
NanKai University, Tian Jin, P.R. China
- 2010 - Permanent Visitor, Theoretical Physics, **University of Oxford**.
- 2022- President & Trustee, *STEMM Global* Scientific Society
- 2021- Fellow, *One Garden Group, Ltd*, online educational platform.
- 2019- Advisor, *BMUCO*, NGO for science outreach
- 2016- Honourary Consultant, *UK-China FinTech Incubator*

PAST

- 2014-23 Professor of Mathematics, City, **University of London**
- 2010-14 Reader in Mathematics, City, **University of London**
- 2008-13 Advanced Fellow, UK Science and Technology Facilities Council
& Department of Theoretical Physics, Oxford (-2010)
- 2005-10 FitzJames Fellow in Mathematics, Merton College, **University of Oxford**.
- 2002-5 Postdoctoral Fellow, Department of Physics and Math/Physics Research Group,
University of Pennsylvania.

EDUCATION

- 2002 PhD, **Centre for Theoretical Physics, MIT**
Thesis: “Algebraic Singularities, Finite Graphs and D-brane Gauge Theories”
Advisor: Prof. Amihay Hanany
- 1997 Graduated **Distinction (First Class)**, **University of Cambridge, UK**
Masters in Mathematics (Tripos, Certificate of Advanced Study in Mathematics)
- 1996 Graduated **Summa Cum Laude (Highest Honours)**, **Princeton University, USA**
Bachelor of Arts in Physics,
Certificate in Applied and Computational Mathematics and Certificate in Engineering Physics

MAJOR AWARDS, HONOURS AND GRANTS

- 2023**
- Leverhulme Trust Grant (with David Marsh, KCL)
 - Friday Night Discourse, Royal Institution (Feb 24)
- 2022** The IonQ Quantum Computer Research Credits Program Grant (with I. Akhalwaya V. Jejjala, & K. Naidoo)
- 2021**
- The Royal Institution Public Lecture: “Theory of Everything”, Dec 1st.
- 2021 - 4 STFC Grant ST/J00037X/3, “Particle Physics at City” (with B. Stefanski & V. Forini)
- 2020** Winner in Book Authority’s 100 best QFT books of all time: *Topology & Physics*, C-N. Yang, M-L. Ge, Y.-H. He. ISBN: 978-981-3278-49-3
- 2019**
- interview by **Science**, Aug, vol 365 issue 6452
 - The Nico van Kampen Colloquium, ITP, University of Utrecht
 - Invited contributor: Oxford Research Encyclopaedia of Physics (OUP, 2019)
 - interview and feature article, *New Scientist*, Dec 9 issue.
- 2018-21** STFC Grant ST/J00037X/2, “Particle Physics at City” (with B. Stefanski & V. Forini)
- 2016** Elected *Honourary Consultant*, China-UK FinTech Incubator
- 2015** Teaching award by School of Maths. Engin. & Comp. Sci, City, U. of London
- 2014**
- Qian-Ren (Thousand Talents) Scholar awarded by the city of Tianjin.
 - ICMS, Edinburgh, Public Lecture.
 - University of Melbourne, Australia, Honourary appointment as visiting professor.
- 2014-7 STFC Grant ST/J00037X/1, “Particle Physics at City” (with B. Stefanski)
- 2012** Annual Staff award for research excellence, Dept. of Maths, City.
- 2011-4** STFC Grant ST/J00037X/1, “Particle Physics at City”
- 2010**
- US NSF grant CCF-1048082, “CiC (SEA-EAGER): A String Cartography”
 - Chang Jiang Chair Professorship by the Chinese Ministry of Education
- 2008** *New Scientist* Jan 15, Featured article
- 2007**
- Elected Advanced Fellow of UK Particle Physics and Astronomy Research Council (PPARC, now STFC)
- 2005**
- Elected the FitzJames Fellow in Maths, Merton College, U. of Oxford.
- 2004**
- US. Airforce Academy, *Physics Colloquium*, and *Distinguished Lecture Series*
- 2002**
- Hong Kong Research Grant Council visiting faculty, Chinese University, HK
- 2000**
- *Superstring 2000 Scholar*, **CMI** (Clay Math Institute)
 - The **Presidential Fellowship** for Excellence in Research, M.I.T.
- 1997**
- **Distinction**, Mathematical Tripos Examination;

- Recipient of College Prize for Outstanding Achievement in Mathematics.
- 1996**
- **Summa cum Laude**, Princeton University;
 - Recipient of the Shenstone Prize in Physics;
 - Recipient of the Kusaka Memorial Prize in Physics;
 - Elected as Member of the **Phi Beta Kappa** National Honour Society;
 - Elected as Member of the **Sigma Xi** National Scientific Honour Society;
 - Recipient of the **NSF Graduate Fellowship** for research in Theoretical Physics.
- 1992**
- Governor of Canada Medal for Outstanding Academic Achievement;
 - Fifth prize, the Canadian National Mathematics Olympiad.

PROFESSIONAL ACTIVITIES

- **Editorial**

- Editor in Chief, *International J. of Data Science in the Mathematical Sciences*, World Scientific
- Editor, *Mathematics*, MDPI
- Editor in Chief, *New Horizons in Mathematical Physics*
- Editor in Chief, *Journal of Modern Physics*
- Member of Editorial Board, *Reviews of Modern Physics*, World Scientific
- Member of Editorial Board, *Frontiers in Physics*
- Member of Editorial Board, *Journal of Physics Research and Applications*
- Member, EPSRC Peer Review Associate College
- Invited Lead Guest Editor, *Advances in High Energy Physics*
- Invited Special Collections Editor, *Advances in Applied Clifford Algebras*, Birkh'auser
- Invited Special Volume Editor, *J. Symbolic Computation*, Springer
- Invited Contributor: Oxford Research Encyclopaedia of Physics, OUP
- Invited Contributor: Chinese Encyclopaedia of Mathematics

- **Referee**

Journals peer review for journals:

General: *Nature*, *Nature Communications*

Mathematics: *Annals of Combinatorics*; *Journal of Symbolic Computation*; *Ukrainian Journal of Mathematics*; *Experimental Mathematics*; *Asian Journal of Mathematics*; *Communications in Mathematical Physics* (CMP); *Open Mathematics*;

Physics: *Journal of High Energy Physics* (JHEP); *Annals of Physics*, Elsevier; *Journal of Mathematical Physics* (JMP); *Proceedings of the Royal Society*; *Journal of Physics, A* (IoP); *Reports on Progress in Physics* (IoP); *Classical and Quantum Gravity*; *Letters in Mathematical Physics*; *Advances in High Energy Physics*;

Machine Learning: *ML in Science & Technology*, IoP; *Sustainable Energy Technologies and Assessments*, Elsevier; *Energy and AI*, Elsevier

Grant Referee UK: *EPSRC, STFC*, Summer research bursary of *LMS*

International: *ERC, European Commission, Ministry of Education*, China; *CONICYT*, Chile; Mustafa Prize Panelist, Iran; *National Research Council*, Iceland; *Academy of Finland, Royal Academy of Sweden*;

Book Reviews Birkhäuser/Springer publishing; Cambridge University Press; Oxford University Press; SIAM; Rutledge C&R; Invited referee: *Geometry and Physics: a Festschrift in honour of Nigel Hitchin*; AMS (American Mathematical Society) reviews; Zentralblatt MATH;

- **External Academic Evaluations**

- External Consultant for hiring committee, dept. of Psychology, CUL, 2017
- External Programme Evaluator, York St. John University, UK, 2018
- External Promotion Evaluator, University of Saskatchewan, Canada, 2021

- **Conference Organization**

- co-organizer (with G. Cardoso, A. Castro, R. de Mello Koch, S. Murthy, S. Nampuri, L. Thorlacius) Isaac Newton Institute, Cambridge: workshop on “Black holes: bridges between number theory and holographic quantum information”, 2023
- co-organizer (with A. Constantin) Oxford LMS Workshop on ML in math/physics, 2023
- co-organizer (with K.-H. Lee and T. Oliver) ICERM (Brown) Workshop on Murmurations, 2023
- co-organizer (with T Fink & C Mishra), AI for Maths Discovery @ LIMS (regular)
- co-organizer (with A Kasprzyk & T Oliver), “Data, Numbers, and Geometry” (DANGER), 2021 - (annual)
- co-organizer (with M-L Ge & C-M Bai), “Nankai Symposium on Mathematical Dialogues” 2021, Chern Institute (Virtual) with special public lecture by Sir Roger Penrose
- co-organizer (with J. Hauenstein et al), SIAM-AG 2021 session on algebraic geometry and machine-learning.
- co-organizer (with S.-T. Yau et al.), “Sanya Workshop on Algebraic Geometry and Machine-Learning”, 2021, Sanya (Virtual)
- session co-organizer, “SIAM Conf on Applied Algebraic Geometry,” 2019, Bern
- co-organizer, ICERM, Brown, “Non-linear Algebra in applications”, 2018
- co-organizer, Chern Institute, “Physics, Geometry and Number Theory”, 2017
- co-organizer, CUHK, “Cluster algebra and math. physics”, 2016
- organization committee member, “Strings 2016”
- co-organizer, Notre Dame-London conf on Quivers and Cluster Algebra, 2016
- session co-organizer, “SIAM Conf on Applied Algebraic Geometry,” 2015, Korea
- co-organizer, “Gauge Theories: quivers, tilings and Calabi-Yau”, ICMS, Edinburgh, May, 2014
- session co-organizer, “SIAM Conf on Applied Alg Geo,” Colorado, Aug, 2013.
- co-organizer, “Gauge Theories, Tilings and Calabi-Yau Geometry”, Royal Society, Chicheley Hall, Nov, 2013.

- co-organizer, “Maths of String and Gauge Theory” Conference in London; Grants from EPSRC, LMS and IoP. May 2012.

- **PhD Thesis Examination**

- Iñaki Garcia-Etxebarria, Universidad Autónoma de Madrid, 2008
- Rhys Davies, University of Oxford, 2010
- Hwasung Lee, University of Oxford, 2012
- Andrew Thompson, Imperial College, London, 2014
- David Garner, Queen Mary, London, 2015
- Andrei Patrascu, University College, London, 2015
- Craig Lawrie, King’s, London, 2015
- Felix Rudolph, Queen Mary, London, 2016
- Jun Bourdier, King’s, London, 2016
- Challegger Mishra, University of Oxford, 2017
- David Jaramillo (MPhys), Ecole Normale Supérieure, Paris, 2019
- Callum Brodie, University of Oxford, 2019
- Ambreen Ahmad, Lahore University of Oxford, 2020
- Zoltan Laczko, Queen Mary, London, 2020
- Stefan Blesneag, University of Oxford, 2021
- Shani Meynet, SISSA/ICTP, Italy, 2021
- Robin Schneider, Uppsala, Sweden, 2022
- Gergely Kantor, Queen Mary, London, 2022
- Sam Whittington, City, UoL, 2022

- Undergraduate Admissions Interviewer:

- Oxford University (for Merton College)
- Princeton University (for UK candidates)

MENTORING: Research Students and Postdocs

- Current

- Edward Hirst, PhD, City, U of London 2019-2021 (went on to postdoc at Queen Mary, UoL)
- Jia-Kang Bao, PhD, City, U of London 2019-
- Ziwen Zhang, PhD, Joint with King's, U of London 2019-
- Ali Zahabi, visiting Postdoc (Bourgogne) 2021-
- Tarun Koteeswaran, Masters in Physics, Oxford, 2022 -
- Ian Cheung, Masters in Physics, Oxford, 2022 -
- Elli Heyes, PhD, City, U of London 2021-
- Siqi Chen, Masters in Physics, Oxford, 2021 - 2022

- Past

- Maks Manko (U. Manchester), LMS Undergrad Research Bursary 2022
- Tejas Acharya, MPhys, Oxford, 2021
- Andrew Nestor, MPhys, Oxford 2021
- Alex Eire, MPhys, Oxford [Physics Prize] 2020
- Lucille Calmon, Masters Theo. Phys., Imperial College, 2019-20
- Toby Peterken, Summer, U. Oxford 2019-20
- Veselin Manojlovic, Summer, U. Oxford 2019-20
- John-Antonio Argyriadis, MPhys, Oxford 2018-9
- Steven Xiao Yan, PhD Student, City, 2014-2018 (University Fellowship, went on to Postdoc at Tsinghua Univeristy)
- Valdo Tatitscheff, visiting PhD student 2017-8 (ENS, Paris, went on to PhD at Strassbourg and then postdoc at Heidelberg)
- Grace Beaney-Colverd, MPhys, Oxford 2017-8 [Particle Theory Prize]
- Kieran Bull, MPhys, Oxford 2017-8 [BP Prize]
- Jem Bishop, MPhys, Oxford 2017-8
- Adam Smith, Masters in Physics, Oxford, 2016-7
- Alexander Chen, Research Student (Westminster School), 2016-7
- Sun Chuang, PhD student (joint with Prof. A.Lukas), Oxford, 2012 - 16
- Malte Probst, Master student, U. Heidelberg (DFG Grant), 2015-6
- Giuseppe de Laurentis, MPhys, Oxford, 2015-6
- Canon Sun, MPhys, Oxford, 2015-6
- Ansar Hassani, Visiting Student (U. Marseille Centrale), 2016
- James Rolf, PhD Student, City Uni, 2014 - 6 (STFC Grant)
- Dr. Zhi Hu, visiting postdoc, USTC, China, 2015
- Dr. Cyril Matti, Helios Research Fellow, City Uni., 2013-15
- Da Zhou, PhD student, 2014-5 (visiting from USTC, China on CSC Scholarship)
- Dominic Miketa, Summer Student, U. Oxford (Balliol Scholarship), 2015

- Gloria Yin, Summer Student, Princeton University, 2015
- Jack Weston [Thresher Prize], Masters in Physics, Oxford, 2014-15
- Stanley Heath, Masters in Physics, Oxford, 2014-15
- Karl McKinnon, Masters in Physics, Oxford, 2014-15
- Mark van Loon, EPSRC summer student, Oxford, 2013 (awarded the EPSRC UG-scheme and the LMS Nuffield Foundation Grant)
- Maike Tormaehlen, PhD student, 2013 (joint with Uni. Hannover under DFG Grant)
- Dr. Benjamin Jurke, Postdoc, Joint with Northeastern, NSF Grant, 2010-2012
- Sownak Bose, Institute of Physics summer research student, 2012 (awarded the Nuffield Foundation Grant; now faculty at Durham)
- James Read, Oriel College summer student & Mphys student, Oxford, 2012 (now faculty at Oxford)
- Nessi Benishti, PhD Student, Oxford, 2009 - 2012
- Maxime Gabella, PhD Student, Oxford, 2008 - 2009
- Christina Gao, Masters in Physics, Oxford, 2011-12
- Anthony Ashmore, Masters in Physics, Oxford, 2010-11 (went on to PhD at Princeton/Imperial, now postdoc in Paris)
- Joel Berkeley, Masters in Physics, Oxford, 2010-11
- Edward Hardy, Masters in Physics, Oxford, 2009-10 (now faculty at Nottingham)
- Joe Hewlett [BP Prize], Masters in Physics, Oxford, 2008-9

INVITED PRESENTATIONS

COLLOQUIA, CONFERENCE TALKS AND LECTURE SERIES

Keynote	Computing 2023	June 2023
Keynote & Panel	IOCMA2023	May 2023
Lecture & Panel	Research Data in Maths, Max Planck Leipzig	Mar 2023
Colloquium & Lecture Series	U. Lisboa	Jan 2023
Comp Diff Geo & App in Physics	Simons Centre	Nov 2022
CS for knotty math problems	DIAS	Nov 2022
ICCIF-2022 Keynote	Zimbabwe (Zoom)	Aug 2022
Planck 2022 Plenary	Paris	June 2022
Kavli Asian Winter Strings 22	Lecture Course	Jan 2022
String Data 2021	Virtual J'bourg	Dec 2021
M-theory & Beyond	NUS Singapore	Nov 2021
ML for HEP, on & off the Lattice	Trento (zoom)	Oct 2021
Black Holes, BPS & Quantum Info	Lisboa (Zoom)	Sep 2021
Geometry, Topology and AI	Toulouse (in person!)	Sep 2021
Lie Theory & Applications XIV	Sofia (Zoom)	Jun 2021
BSM 2021	Cairo (zoom)	Mar 2021
Winter School on ML	Cambridge Accelerate Programme	Jan 2021
KEK Theory Workshop	Tokyo (zoom)	Dec 2020

Coral Gables	Miami (zoom)	Dec 2020
String Data 2020	CERN (zoom)	Dec 2020
Maths Colloquium	U. Connecticut	Sept 2020
Clifford Algebra & Applications 2020	Plenary Lecture	July 2020
Plenary talk, String Maths 2020	Capetown	July 2020
Int. Congress. Math. Software 2020	Braunschweig	July 2020
Theory Colloquium	U. Torino	Nov 2019
SageMath/M2 - Open Source Init	IMA, U. Minnesota	Jul 2019
Lecture series on Alg Geo in HEP	PIMS/Fields Summer School, Saskatoon	Jun 2019
String Geometry & String Pheno,	CERN	Jun 2019
The Nico van Kampen Colloquium	Utrecht	Jun 2019
ML Meets Physics	Microsoft HQ	Apr 2019
M/Strings of C21st	NUS, Singapore	Nov 2018
Theory Colloquium	Trinity, Dublin	Sept 2018
Gravity & QFT	Tianjin University	Jul 2018
Lecture Series on CY	Nankai University	Jul 2018
Quantum Geometry & Moduli Spaces	Sonderburg, Denmark	Jul 2018
Geometry and Physics	Warwick Workshop on Math/Phys	Jul 2018
Lecture Series	Confucius Institute, Geneva	Jun 2018
London Geometry Symposium	Imperial College, London	Jun 2018
String Data	LMU, Munich	Mar 2018
Automorphic Forms	Heilbronn, Bristol	Feb 2018
SUSY Gauge Theory	Tsinghua Centre, Sanya, China	Jan 2018
String Data	Northeastern, Boston	Nov 2017
NCTS Taiwan	Keynote speaker; 10th Taiwan Strings	Oct 2017
KIAS	Arithmetic Geometry & QFT	Aug 2017
Tsinghua YMSC	Summer Workshop on Geom. & Phys.	Aug 2017
U. of York	Northern British Math/Phys Symposium	May 2017
UAM, Madrid	geometry colloq	Apr 2017
Séminaire “Fables Géométriques”	U. Genève	Mar 2017
Current Topics in String Theory	KIAS, Korea	Dec 2016
Number Theory & QFT	PoTech, Korea	Aug 2016
Grothendieck-Techmüller Workshop	Chern Institute (plenary)	Jul 2016
QCD 2016, Brown/Paris	ABC Conjecture & SYM	Jun 2016
Notre Dame Global Gateway	London Conference	May 2016
Oberwolfach	Toric Geometry	Mar 2016
ITP, China	Chinese Academy of Science, Colloquium	Jan 2016
LMS	LTCC Christmas Lecture	Dec 2015
Beijing	Beijing Geometry/Physics Colloquium	Sept 2015
Daejeon, Korea	SIAM conference, mini-symposium	Aug 2015
U. Notre Dame	Math Colloquium	Mar 2015
KIAS, Korea	Quiver Conference	Jan 2015
London	The London Triangle Lecture	Dec 2014
Queen Mary, London	Permutations and Duality Workshop	July 2014
Cheng-Du	Algebraic Geometry Workshop	June 2014
UIUC	Macaulay2 Conference	June 2014
Edinburgh	ICMS Quiver Workshop	June 2014
Royal Society	Chicheley Hall Workshop	Nov 2013
US Airforce Academy	Physics Colloquium	Aug 2013
SIAM Alg.Geo. conference	mini-symposium	Aug 2013

Seoul, Korea	Pre-strings; Exact results in Gauge theory	June 2013
Hannover, Germany	Lect Series on Dimers & Gauge theory	May 2013
Melbourne, Australia	Hon. appoint. as Visiting Faculty	Mar 2013
Tianjin, China	29th Int. Colloq. in Group theory & Physics	Aug 2012
Stonybrook,USA	String Phenomenology	Apr 2012
Nankai U.	Physics Colloquium	Oct 2011
Nankai U.	First invited speaker: Graduate Symposium	Oct 2011
SVP, UPenn	Progress in Heterotic Algorithms	May 2011
Oberwolfach	Workshop: Real Enum. Prob. in Alg Geo	April 2011
Nankai U.	Lecture Series	Mar 2011
Cardiff	Workshop on Quivers	Feb 2010
Fort Lauderdale	Coral Gables Annual Conference	Dec 2009
Potsdam	(0,2) Workshop	Aug 2009
Peking U.	Lecture Series: Enumrative Geometry	June 2009
Leeds	Workshop on Quivers and Integrable Systems	May 2009
Trinity, Dublin	Annual Irish QFT Meeting	May 2009
Hong Kong	Frontiers of Geometry Conference	Sept 2008
Peking U.	Lecture Series: Intro to Superstrings	June 2008
SVP, Tucson	Geometric Approach to Phenomenology	Apr 2008
Cornell	Comp. Alg. Geo. Conference,	Mar 2008
Cambridge	SIS Workshop: Triadophilia	Sept 2007
QCD 2007, Paris	Probing $N = 1$ Vacua	Jun 2007
MPI. Munich	Heterotic String Workshop	May 2006
NW. Uni, Xi-An	Strings Satellite : Geometry & Topology	June 2006
ZheJiang U.	Christmas Workshop in String Theory	Dec 2005
Chinese Academy of Sciences	Lecture Series	Aug 2004
US. Airforce Academy	Physics Colloq. & Lect. Series: "Strings."	May 2004
Virginia Tech	Physics Colloquium: Muss Es Sein	Mar 2003
Chinese U., HK	HongKong Geometry Symposium	May 2002
U. Cambridge	Workshop on String Theory and Geometry	Mar 2002
U. Ohio	APS Meeting: D-Branes & Toric Singularities	Aug 2000

OUTREACH & Public Talks

Friday Evening Discourse	Royal Institution	Feb 2023
Barton Peveril college	interview	Nov 2022
Royal Institution Public Lecture	Theory of Everything	Oct 2021
St. Alban's School	ToE@Hawking's old school	Oct 2021
Princeton/CalTech Alum Association	ToE	Sept 2021
Stemm Global	Interview	Jun 2021
LIMS	London	Dec 2020
BMUCO	Public talk & honorary consultant	Nov 2020
Nankai Physics Alumni Association	Nankai	May 2020
Pint of Science	London	May 2018
Luton 6th Form College	London	Mar 2018
Pint of Science	London	May 2017

Knowitwall	interview	Mar 2017
Dulwich College	Monster and an OA	Feb 2017
Palantir Big Data	London	June 2016
Pint of Science	London	May 2016
Eton College	Muss es Sein	Feb 2015
Dulwich College	Strings and Geometry	Nov 2014
City Uni, London	Generating Genius	Oct 2014
ICMS Public Lecture	ICMS, Edinburgh	May 2014
Math & Humanities Mag	Essay (in Chinese)	Dec 2013
Faculti Media	Interview	April 2013
Oxford Science Teachers	What is Theoretical Physics?	July 2012
The Times	Eureka Magazine (reviewer)	July 2012
Charterhouse School	Feynmann Club lecture	Jan 2012
Westminster School	The Theorey of Everything?	Nov 2011
Merton College, Oxford	History of the Book: LaTeX	Jan 2011
Merton College, Oxford	God and Strings	April 2010
Imperial College, London	Historical remarks on Galois,	Feb 2010
Univ. College, London	Je n'ai pas le temps: Birth of Modern Alg	Jan 2010
UST and IAS, HK	Outreach Lecture: "Müß es Sein"	July 2008
Oxford	Merton Calculators of C14th	Apr 2007
NJ Radio	A Dialogue between Faith and Reason	July 2006
Tai-Pei	Overseas Chinese Physicists Asso.	June 2006

RESEARCH SEMINARS

INI, Cambridge	seminar on AI/Maths	Sept 2023
Geometry Webinar AmSur	Brazil (zoom)	May 2023
Online ML Woekshop	Nottingham	Apr 2023
Rome Tor Vergata	physics seminar	Feb 2023
Moscow Geometry Seminar	Moscow (zoom)	Nov 2022
Seminar GEOTOP-A	GeoTop online	Apr 2022
NUI Galway	COGENT seminar	Dec 2021
U. Leicester	seminar	Nov 2021
NaapingClass Group	U. Tokyo	Nov 2021
AATRN seminar	IMA, UMN	June 2021
CFT seminar	University of Pisa	Apr 2021
Math/Physics Seminar	Zhejiang U	Jan 2021
ML/Physics Seminar	Harvard University	Nov 2020
Seminar	CitAI Center, U of London	Oct 2020
Maths seminar	Nottingham	Aug 2020
East Asia Strings	Taipei-Seoul-Tokyo	Sep 2020
Nankai	Theoretical Physics Seminar	Jun, 2020
Imperial	String seminar	May, 2020
Oxford	Maths Inst	May, 2020
Nottingham	Geometry/Number theory	Oct, 2019
Oxford (CS)	String, Geometry & ML	June, 2019
Southampton	Machine-Learning in Strings	Mar, 2019
CERN	Theory seminar	Feb, 2019
Oxford (Philosophy)	Exceptional and Sporadic	Jan, 2019
Brown University	Deeping Leaning the Landscape	Nov, 2018
Harvard University	Deeping Leaning the Landscape	Nov, 2018
Upenn	Deeping Leaning the Landscape	Nov, 2018
Witts U Johannesburg	Deeping Leaning the Landscape	June, 2018
NBI, Copenhagen	Deeping Leaning the Landscape	May, 2018
AEI, Potsdam	Deep Learning	Apr, 2018

Nottingham U.	Deeping Leaning the Landscape	Apr, 2018
York Complexity Centre	Sporadic & Exceptional	Mar, 2018
U. Brussels/Leuven	Machine Learning & string theory	Feb, 2018
U. Plymouth	Deep-Learning the Landscape	Nov, 2017
U. Vienna	CY volumes	May 2017
York	Reflexive polytope and CY	May 2017
UA Madrid	Math & Physics seminars	Apr 2017
Uppsala	Quivers and Dessins	Mar 2017
Geneva	Quivers and CY	Mar 2017
Oxford	Quivers, CY & Dessins	Feb 2017
Oxford	Yang-Mills Theory & ABC Conjecture	Apr 2016
Open U, UK	String Theory	Apr 2016
Milan, Bicocca	Yang-Mills Theory & ABC Conjecture	Mar 2016
City U, London	Yang-Mills Theory & ABC Conjecture	Feb 2016
Queen Mary, London	Sporadic & Exceptional	Nov 2015
KIAS & Ewha U, Korea	Sporadic & exceptional	Aug 2015
Virginia Tech	Multiplicative eta products	Mar 2014
King's London	eta products and K3 surfaces	Dec 2014
U. Bath	Alg geo seminar: multiplicative eta products	Nov 2014
U. Hannover	Riemann Centre Seminar: quivers & dessins	Apr 2014
U. Warwick	Geometry Seminar: quivers & dessins	Nov 2013
U. Surrey	FSG Seminar: quivers & dessins	Oct 2013
Perimeter Inst.	Strings/Fields Seminar	May 2013
McGill Uni.	Physics Seminar: construction of CY3 database	May 2013
Harvard U	Geometry/Physics Seminar: quivers & dessins	April 2013
Melbourne Uni	Visiting Prof. & Seminar	April 2013
CERN	Seminar to Theory Division	Mar 2013
USTC, HeFei, China	Math. Physics seminar	Jan 2013
Nanjing, China	physics seminar	Aug 2012
Oxford	string seminar	May 2012
Brown U.	physics seminar: modular gauge theory	Apr 2012
Imperial College	MAGIC seminar	Mar 2012
Oxford	QFT seminar	Feb 2012
BeiJing	Chinese Academic of sciences	Sept 2011
Virginia Tech	Stringy searches for the MSSM	May 2011
Edinburgh	On Fields over Fields	Nov 2010
Oxford	On Fields over Fields	Mar 2010
UPenn	On Fields over Fields	Mar 2010
Brown	The MSSM in Heterotic compactification	Apr 2010
Northeastern	The MSSM in Heterotic compactification	Mar 2010
City U, London	Quivers, Branes and Gauge Theories	Mar 2010
LMU, Munich	The Plethystic Programme	Feb 2010
Oxford	The Monad Programme	Feb 2010
UST, Hong Kong	Comp. Alg. Geom. & String Theory	July 2008
Imperial, London	Special Corner of Landscape	Mar 2008
CERN	Quiver Gauge Theories: Recent Progress	May 2008
U. Edinburgh	Special Corner of Landscape	Apr 2008
U. Brussels	Geometric Aperçu to $N = 1$	Apr 2008
Fields Institute, Toronto	Triadophilia	Feb 2008
Queen Mary, London	Plethystics	Feb 2008
U. Turin & Alessandria	The Plethystic Programme	Oct 2007
U. Cardiff	Plethystics	Nov 2007
Brown U.	MSSM from Heterotic String	Apr 2007
U. Pennsylvania	The Plethystic Programme	Apr 2007
U. Oxford	Theory Seminar	Apr 2007
U. Paris	Joint Theory Semnar	Mar 2007
Northeastern, Boston	Heterotic Standard Model	Mar 2007
U. Alberta, Canada	Quivers and Plethysitics	Mar 2007
IAS, Dublin	Quivers and Plethysitics	Feb 2007
U. Rome, Tor Vergata	The Plethystic Programme	Jan 2007
Swansea, Wales	Heterotic Standard Model	Dec 2006
CERN, Geneva	Probing The Geometry of $N = 1$ Vacua	Sep 2006
NTU, Tai-Pei	Geometrical Phenomenology	June 2006
IAS, Princeton	Vacuum Geometry of $N = 1$ Theories	June 2006
ETH. Zurich	Heterotic Standard Model	May 2006
U. Oxford	A String Symphony	May 2006
U. Amsterdam	Probing $N = 1$ Vacua	May 2006
Imperial, London	Heterotic MSSM	Mar 2006
U. Liverpool	Phenomenological Geometry	Feb 2006
U. Cambridge	Heterotic MSSM	Jan 2006
U. Oxford	Geometrical Phenomenology	Nov 2005
National U. , TaiWan	A Heterotic Standard Model	Aug 2005

IAS, Princeton	A Heterotic Standard Model	Feb 2005
U. Edinburgh	Calabi-Yau, Gauge Theories & Superstring	Feb 2005
U. Oxford	CY: Gauge & String theory	Feb 2005
U. Chicago	A Heterotic Standard Model	Jan 2005
U. Amsterdam	Heterotic $SU(5)$ -GUT Particle Spectra	Nov 2004
King's College, London	Heterotic GUTs	Nov 2004
U. Oxford	Heterotic GUTs	Nov 2004
CalTech	$SU(5)$ -GUTs from Heterotic Compactifications	Mar 2004
KITP, Santa Barbara	$SU(5)$ -GUTs from Heterotic String	Mar 2004
Stanford U.	GUTs from Heterotic String	Mar 2004
Columbia U.	Chaotic Duality in String Theory	Feb 2004
Rutgers U.	Modular Matrix Models & Monstrous Moonshine	Feb 2004
U. Wisconsin, Madison	Modular Matrix Models	Feb 2004
KITP, Santa Barbara	Modular Matrix Models	Nov 2003
U. Washington	D-Branes & Duality	Sept 2003
MIT	Variations on a Theme by Dijkgraaf-Vafa	May 2003
Chinese U., Hong Kong	Rational CFT & Complex Multiplication	Jan 2003
U. Pennsylvania	D-branes, del Pezzos and Duality	Sep 2002
UST, Hong Kong	D-Branes & Duality	May 2002
U. Wales, Swansea	Toric Duality	Mar 2002
Stanford U.	Toric Duality = Seiberg Duality	Dec 2001
Rutgers U.	Toric Duality	Dec 2001
UC San Diego	Toric Duality	Dec 2001
U. I. Urbana-Champaign	Toric Duality	Oct 2001
Princeton U.	Toric Duality	Oct 2001
Harvard U.	Duality Seminar	Oct 2001
UC Berkeley	Toric Duality	Sep 2001
U. Pennsylvania	Toric Duality	Sep 2001
Harvard U.	Quivers and D-branes	Oct 2000
U. Michigan	Strings 2000, poster	Jul 2000
MIT	D-Brane Gauge Theories	Apr 2000
MIT	More Magic on Orbifolds	Feb 1999
MIT	SFT & Non-Commutative Geometry	Apr 1998
MIT	Weyl-Kac Character for Affine Lie Alg	Feb 1998

Language Skills

English & Chinese (bi-lingual), French (proficient), Italian & Latin (some knowledge).

PUBLICATIONS: Yang-Hui He

BOOKS

- C. N. Yang, M. L. Ge and Y. H. He, Ed. **Topology and Physics**, with contributions from Atiyah, Dijkgraaf, Penrose, Witten, et al., doi:10.1142/11217, World Scientific 2019, ISBN: 978-981-3278-49-3
- Y. H. He, *The Calabi-Yau Landscape: from Geometry, to Physics, to Machine-Learning*, Springer, Lecture Notes in Mathematics 2293, ISBN 978-3-030-77562-9
- M. L. Ge and Y. H. He, Ed. *Dialogues Between Physics and Mathematics: C. N. Yang at 100*, with contributions from Manin, Penrose, Polyakov, Wilczek, Witten, et al, doi:10.1007/978-3-031-17523-7, Springer-Nature 2022, ISBN 978-3-031-17522-0
- Y. H. He, Ed. *Machine Learning in Pure Mathematics and Theoretical Physics*, doi:10.1142/q0404, World Scientific 2023, ISBN: 978-1-80061-369-0
- Y. H. He, M. L. Ge, C. Bai, J. Bao and E. Hirst, “Nankai Symposium on Mathematical Dialogues: Celebrating the 110th anniversary of the birth of Prof. S.-S. Chern,” Springer, 2022, ISBN 978-981-19-2327-2
- Y.-H. He, P.-P. Dechant, A. Kasprzyk, A. Lukas, Ed. *Machine-Learning Mathematical Structures*, Topical Collection, Advances in Applied Clifford Algebras, Springer-Birkhäuser, to appear, 2021
- J. Hauenstein, Y.-H. He, I. Kotsireas, D. Mehta, T. Tang, Ed. *Algebraic Geometry and Machine Learning*, Special Volume, J. Symbolic Computation, Elsevier, to appear, 2022.
- Yang-Hui He, Philip Candelas, Amihay Hanany, Andre Lukas, and Burt Ovrut, Ed. *Computational Algebraic Geometry in String and Gauge Theory*, special volume, Hindawi 2012. doi:10.1155/2012/431898

Invited Book Contributions

- Y.-H. He, “Calabi-Yau Spaces in the String Landscape,” in, *Oxford Research Encyclopedia of Physics*, B. Foster Ed., OUP, 2020.
- Y.-H. He, “AI for ToE”, in *AI for Physics*, V. Knecht, Ed. CRC Press, 2022.
- Y. H. He, E. Heyes and E. Hirst, “Machine Learning in Physics and Geometry,” in Elsevier’s Handbook of Statistics, Volume 49: Artificial Intelligence edited by S. G. Krantz, A. S. R. Srinivasa Rao, and C. R. Rao. [arXiv:2303.12626 [hep-th]].
- B. Feng, A. Hanany and Y.-H. He, “Z-D Brane Box Models and Non-Chiral Dihedral Quivers,” hep-th/9909125, in *Many Faces of the Superworld: the Golfand Memorial volume*. 2000, WS, ISBN 978-981-02-4206-0 doi.org/10.1142/4332

Journal Publications

242 publications, 7818 total citations (20 papers are 100+) and h-index = 47 (google scholar)

- [1] M. W. Cheung, P. P. Dechant, Y. H. He, E. Heyes, E. Hirst and J. R. Li, “Clustering Cluster Algebras with Clusters,” [arXiv:2212.09771 [hep-th]].
- [2] S. Chen, Y. H. He, E. Hirst, A. Nestor and A. Zahabi, “Mahler Measuring the Genetic Code of Amoebae,” [arXiv:2212.06553 [hep-th]].
- [3] M. Amir, Y. H. He, K. H. Lee, T. Oliver and E. Sultanow, “Machine Learning Class Numbers of Real Quadratic Fields,” [arXiv:2209.09283 [math.NT]].
- [4] I. Y. Akhalwaya, S. Ubaru, K. L. Clarkson, M. S. Squillante, V. Jejjala, Y. H. He, K. Naidoo, V. Kalantzis and L. Horesh, “Towards Quantum Advantage on Noisy Quantum Computers,” [arXiv:2209.09371 [quant-ph]].
- [5] Y. H. He, K. H. Lee, T. Oliver and A. Pozdnyakov, “Murmurations of elliptic curves,” [arXiv:2204.10140 [math.NT]].
- [6] P. P. Dechant, Y. H. He, E. Heyes and E. Hirst, “Cluster Algebras: Network Science and Machine Learning,” [arXiv:2203.13847 [math.CO]].
- [7] J. Bao, Y. H. He and A. Zahabi, “Crystal Melting, BPS Quivers and Plethystics,” [arXiv:2202.12850 [hep-th]].
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- [11] I. Y. Akhalwaya, Y. H. He, L. Horesh, V. Jejjala, W. Kirby, K. Naidoo and S. Ubaru, “Efficient Quantum Computation of the Fermionic Boundary Operator,” [arXiv:2201.11510 [quant-ph]].
- [12] Y. H. He and J. M. P. Ipiña, “Machine-Learning the Classification of Spacetimes,” [arXiv:2201.01644 [gr-qc]].
- [13] A. Ashmore, L. Calmon, Y. H. He and B. A. Ovrut, “Calabi-Yau Metrics, Energy Functionals and Machine-Learning,” [arXiv:2112.10872 [hep-th]].
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