2018

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Annual meeting of International Consortium of Chinese Mathematicians

世界華人數學家聯盟年會

2018 ICCM Best Paper Award

Award Ceremony

ICCM

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Contents

Program

2018 ICCM Best Paper Award Opening Ceremony

Date: December 27, 2018
Time: 09:00-10:30
Venue: The Forum, GIS NTU Convention Center

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09:40-09:50	Presentation of The Chinese University of Hong Kong, Shenzhen, H.L. TU Best Paper Award
09:50-10:20	Presentation of 2018 ICCM Best Paper Award
10:20-10:30	Group Photo
10:30-11:00	Break
11:00-12:00	Registration

| Media Interview	Distinguished Lecture
Venue: RAPHAEL, GIS NTU Convention Center	**Prof. George Lusztig** (Massachusetts Institute of Technology) Venue: The FORUM, GIS NTU Convention Center

2018 ICCM Best Paper Award

Introduction

The ICCM is delighted to announce the second ICCM best paper award sponsored by TCL and The Chinese University of Hong Kong, Shenzhen, H.L. TU. Thirty medals with equalty are expected to be awarded at the ICCM annual meeting, December 27th, 2018. A paper is eligible for the consideration of the 2018 best paper award if the following criteria are met:

1. The paper is posted on MathSciDoc before April 30th, 2018. The website is at http://archive.ymsc.tsinghua.edu.cn.
2. One of the principal authors is a Chinese descendant.
3. The paper was published in a respectable journal in the last five years (2013-2018).
4. The paper has never won a gold medal of the ICCM best paper award.

The rules of ICCM Best Paper Award

1. This year in the annual meeting of ICCM, thirty medals are expected to be awarded to papers which are authored by Chinese descendants. In addition, several distinguished papers（若琳獎）will be honored based on the recommendation of the committee members.
2. The selection process consists of two rounds. In the first round, there will be 20 subject committees, and in the second round there will be a global committee. The committee members will be appointed by the ICCM scientific committee.
3. Each proposed paper should be authored by at least one Chinese descendent.
4. Only papers that are posted on MathSciDoc will be considered. A proposed paper should be published in a respectable journal in the last five years.
5. In December, award candidates will be invited to speak at the annual meeting of ICCM. The prize will only be awarded to candidates who attend the annual meeting. Distinguished paper awardees are welcomed to attend the annual meeting.
6. The award ceremony will take place in the morning of the first day of the annual meeting.

2018 ICCM Global Selection Committee
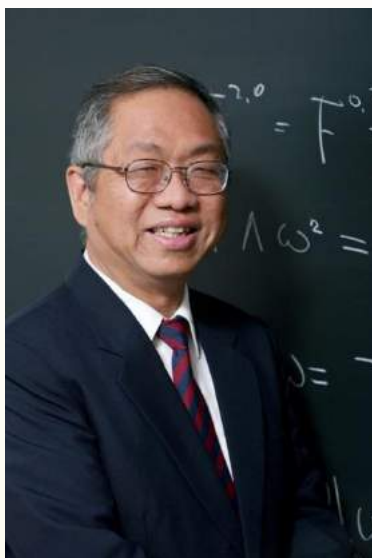
Shing-Tung Yau

President of ICCM

Chair of 2018 ICCM BPA Global Selection Committee

Shing-Tung Yau is born in Shantou, China. After he studied mathematics at the Chinese University of Hong Kong, he went to the University of California, Berkeley in 1969. At the age of 22, Yau was awarded the Ph.D. degree under the supervision of Shiing-Shen Chern. After a year as a member of the Institute for Advanced Study, Princeton, and two years at the State University of New York at Stony Brook, he went to Stanford University. Since 1987, he has been a Professor of Mathematics at Harvard University. Since 2013, he is also appointed a Professor of Physics at Harvard.

Yau's work is in geometry in the broadest sense. He was the first person to combine differential geometry and analysis, and used their interaction to solve longstanding problems in both subjects. Yau's work opened up new directions, set foundations and changed people's perspectives towards mathematics and their applications in physics and computer science. For example, his proof of the positive energy theorem in general relativity demonstrated—sixty years after its discovery—that Einstein's theory is consistent and stable. His proof of the Calabi conjecture gave solutions of multiple well-known open problems in algebraic geometry and also allowed physicists to show that string theory is a viable candidate for a unified theory of nature. Calabi–Yau manifolds are among the 'standard toolkit' for string theorists today.

Professor Yau also spends an enormous amount of energy to train young mathematicians at every level. He has been directors of the Institute of Mathematical Sciences at the Chinese University of Hong Kong, the Morningside Center of Mathematics of the Chinese Academy of Sciences, Center of Mathematical Sciences in Zhejiang University. In December 2009, Shing-Tung Yau was invited to serve as the inaugural director of the Mathematical Sciences Center at Tsinghua University (Renamed Yau Mathematical Sciences Center in 2015).

He won Oswald Veblen Prize in 1981, Fields Medal in 1982, MacArthur Fellow Award in 1984, Crafoord Prize in 1994, United States National Medal of Science in 1997, China International Scientific and Technological Cooperation Award in 2003, Wolf Prize in Mathematics and Asian American Engineer of the Year, AAEOY in 2010.

Simon Donaldson

Professor Donaldson is the Royal Society Research Professor at Imperial College London and a permanent member of the Simons Center for Geometry and Physics at Stony Brook University. His primary research areas are differential geometry and topology. He is a fellow of the Royal Society, the Royal Swedish Academy of Sciences, and the American Mathematical Society. Professor Donaldson was awarded the Junior Whitehead Prize (1985), Fields Medal (1986), Royal Medal (1992), Crafoord Prize (1994), Pólya Prize (1999), the King Faisal International Prize (2006), the Nemmers Prize in Mathematics (2008), the Shaw Prize in Mathematics (2009), Breakthrough Prize in Mathematics (2014).

Bjorn Engquist

Professor Engquist is currently Professor of the Computational and Applied Chair I at the Institute for Computational Engineering and Sciences at the University of Texas at Austin. His research mainly focuses on development and analysis of numerical methods for differential equations with applications to multi-scale modeling, electromagnetism and fluid mechanics. Professor Engquist is a member of the American Academy of Arts & Sciences, the Royal Swedish Academy of Sciences, the Royal Swedish Academy of Engineering Sciences, and the Norwegian Academy of Sciences and Letters; besides, he was an invited speaker at the International Congress of Mathematics in 1982 and in 1998. He is a recipient of the first SIAM James H. Wilkinson Prize in Numerical Analysis and Scientific Computing (1982), Peter Henrici Prize (2011), and George David Birkhoff Prize (2012).

Eduard Looijenga

Professor Looijenga is Professor of Mathematics at Yau Mathematical Sciences Center of Tsinghua University. His research areas are algebraic geometry and the theory of algebraic groups, in particular moduli spaces and locally-symmetric varieties. Professor Looijenga was an invited speaker at the International Congress of Mathematicians in 1978. He is a member of the Royal Netherlands Academy of Arts and Sciences and one of the inaugural fellows of the American Mathematical Society.

Bjorn Poonen

Professor Poonen is the Claude Shannon Professor of Mathematics at Massachusetts Institute of Technology. His research focuses on number theory and algebraic geometry; particularly, he is interested in developing methods for determining the rational number solutions to polynomial equations and in proving that certain problems are undecidable. Professor Poonen has been elected to American Mathematical Society and American Academy of Arts and Sciences. He is a recipient of Sloan Research Fellowship (1998), Packard Fellowship (1998), Guggenheim Fellowship (2011), Simons Fellow in Mathematics (2015); besides, he was awarded Chauvenet Prize (2011).

Donald Rubin

Professor Rubin is the John L. Loeb Professor of Statistics at Harvard University. His research interests are causal inference in experiments and observational studies, inference in sample surveys with nonresponse and in missing data problems, application of Bayesian and empirical Bayesian techniques, and developing and applying statistical models to data in a variety of scientific disciplines. Professor Rubin has been elected to the Woodrow Wilson Society, Guggenheim Memorial Foundation, Alexander von Humboldt Foundation, American Statistical Association, Institute of Mathematical Statistics, International Statistical Institute, American Association for the Advancement of Science, American Academy of Arts and Sciences, European Association of Methodology, the British Academy, and the U.S. National Academy of Sciences.
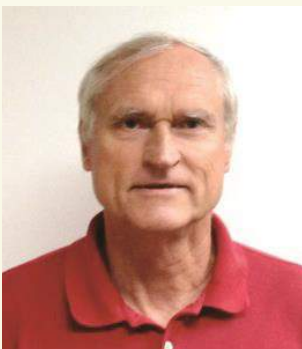
Richard Schoen

Professor Richard Schoen is currently an Excellence in Teaching Chair at University of California Irvine and was the Bass Professor of Humanities and Sciences at Stanford University. His research interest mainly lies in differential geometry and notable accomplishments include solutions of the fundamental positive mass conjecture in general relativity (with S.-T. Yau), the Yamabe problem on compact manifolds, and the differentiable sphere theorem (with S. Brendle). Professor Schoen has been elected to the American Academy of Arts and Sciences and the National Academy of Sciences and became a fellow of the American Mathematical Society. He is a recipient of the MacArthur Fellowship (1983), Bôchner Memorial Prize (1989), the Guggenheim Fellowship (1996), the ICCM International Cooperation Award (2010), Wolf Prize (2017), Heinz Hopf Prize (2017), Lobachevsky Prize (2017), and Rolf Schock Prize (2017).

Wilfried Schmid

Professor Schmid is the Dwight Parker Robinson Professor of Mathematics at Harvard University. His research concerns Lie groups and their representations. He introduced geometric methods in the study of infinite dimensional representations; on the other hand, he applied representation-theoretic methods in the other areas of mathematics. Professor Schmid has served as Mathematics Advisor to the Massachusetts Department of Education, a member of the Steering Committee of Mathematics of the National Assessment of Educational Progress, and a member of the National Mathematics Advisory Panel of the U.S. Department of Education. He is a fellow of the American Mathematical Society in 2012.

Kevin Costello

Professor Costello is an Irish mathematician, has held the Krembil Foundation William Rowan Hamilton chair of theoretical physics at the Perimeter Institute since 2014. The long-term goal of his research is to provide rigorous constructions of (parts of) string theory with a view towards formulating string dualities in mathematical terms. He has won the Fellow of the Royal Societyand Berwick Prize of the London Mathematical Society.

Duong Hong Phong

Professor Phong is a professor of Mathematics, Columbia University, specializing in partial differential equations, string theory and complex geometry. He was a researcher at the Institute for Advanced Study in Princeton, New Jersey. In 2009 Phong was awarded the Stefan Bergman Prize for his research on the operators involved in the Neumann d-bar problem and on pseudo-differential operators.

Steve Zelditch

Professor Zelditch is an American mathematician, a professor at Wayne and Elizabeth Jones Professor of Mathematics of Northwestern University, specializing in global analysis, complex geometry and mathematical physics .He was elected a fellow of the American Mathematical Society in 2012, and hold the editorial boards of Communications in Mathematical Physics, Analysis & PDE and the Journal of Geometric Analysis.

Awardees of Best Paper Award

Paul Bourgade, Laszlo Erdos, Horng-Tzer Yau and Jun Yin, Fixed energy universality for generalized wigner matrices, communications on pure and applied mathematics, 69 (2016), Issue10, 1815-1881, mathscidoc: 1608.28003

Horng-Tzer Yau

Horng-Tzer Yau
He received his B.Sc. in 1981 from National Taiwan University and his Ph.D. in 1987 from Princeton University. Yau joined the faculty of NYU in 1988, and became a full professor at Courant Institute of Mathematical Sciences in 1994. He moved to Stanford in 2003, and then to Harvard University in 2005. He was also a member of the Institute for Advanced Study in Princeton, New Jersey, in 1987-88, 1991–92, and 2003, and was a Distinguished Visiting Professor in 2013-14.

Paul Bourgade
Associate Professor of Mathematics, New York University
Education
Ph.D., Mathematics, Université Paris 6, France, 2009.
M.S., Probability, Université Paris 6, France, 2007.
M.S., Computer Science, Telecom Paris, France, 2007.
B.S., Mathematics and Physics, École Polytechnique, France, 2006.

László Erdös
László Erdös is interested in mathematical physics and probability theory, especially disordered quantum systems. Such systems in the delocalized regime are believed to obey the universal local statistics described by random matrices, a conjecture that has recently been proved for Wigner matrices. While at the Institute, his goal is to focus on systems with spatial dependence.

Jun Yin
2003. B.S. in SCGY of University of Science and Technology of China.
2008. PHD in physics department of Princeton University.
2008. Got married with Lin Fu
2008-2011. Benjamin Peirce lecturer in mathematics department of Harvard.
2010. Had the first child.
2011-2016. Assistant professor in UW-Madison
2013-2014. Von Neumann research fellowship in IAS.
2016-2017. Associate professor in UW-Madison

2017. Had the second child.
2017-present. Associate Professor at Department of Mathematics,
University of California, Los Angeles

Dimitar Jetchev, Christopher Skinner and Xin Wan, The Birch and Swinnerton-Dyer formula for elliptic curves of analytic rank one, Cambridge Journal of Mathematics, 5 (2017), Number 3, 369–434, mathscidoc: 1703.24005

Xin Wan
PhD 2012, Princeton University
Advisor: Christopher Skinner
2012-2013   Member in Institute for Advanced Study
2013-2016   Ritt assistant professor, Columbia University,
2016-   Associate professor in Morningside Center of
                  Mathematics, Academy of Mathematics and
                  Systems Science, Chinese Academy of Science

Xin Wan

Dimitar Jetchev
Currently, I am a Swiss National Science Foundation Professor in number theory, arithmetic algebraic geometry and mathematical cryptology at SMA, EPFL. I completed my PhD in number theory and arithmetic geometry at the University of California, Berkeley in 2008 under the supervision of Prof. Ken Ribet. I was then a post-doc at IHES, Bures-sur-Yvette as well as the Laboratory for Cryptologic Algorithms, LACAL at EPFL.

Christopher Skinner
Professor of Princeton University,
PhD 1997, Princeton University, Advisor: Andrew Wiles.
Worked in Institute for Advanced Study, University of Michigan and Princeton University.

Huanchen Bao and Weiqiang Wang, Canonical bases arising from quantum symmetric pairs, Inventiones Mathematicae, 213 (2018), no. 3, 1099–1177, mathscidoc: 1804.2900

Huanchen Bao
Huanchen Bao is currently a Brin Postdoctoral Fellow at the University of Maryland, College Park. He obtained his B.S. in Mathematics at Sichuan University in 2010, and his Ph.D. from the

Department of Mathematics at University of Virginia in 2015.

Weiqiang Wang

Weiqiang Wang is a professor of Mathematics at University of Virginia since 2006. He graduated from University of Science and Technology of China in 1989, and received his PhD from MIT in 1995. He was a postdoc at IAS, Yale and Max-Planck Institute at Bonn before starting a tenure-track position at North Carolina State University in 1999 and then becoming an associate professor at University of Virginia in 2001. He is an AMS fellow. His research interest lies in representation theory of Lie superalgebras, Hecke algebras, and quantum groups. He enjoys collaborations and has learned a lot from his many collaborators and students over the years, including his long-term collaborator Shun-Jen Cheng from Taipei (coauthor of 20+ papers and a book, still counting).

Huanchen Bao

Zhijie Chen, Ting-Jung Kuo, Chang-Shou Lin and Chin-Lung Wang, Green function, Painleve VI equation, and Eisenstein series of weight one, Journal of Differential Geometry, 208 (2018), 185-241, mathscidoc: 1608.08002

Zhijie Chen
Associate professor at Yau Mathematical Sciences Center, Tsinghua University

Ting-Jung Kuo
Assistant Professor at Department of Mathematics, National Taiwan Normal University

Chang-Shou Lin
Chair Professor at Department of Mathematics, National Taiwan University; Chair of Center for Advanced Studies in Theoretical Sciences; Member of Academia Sinica

Chin-Lung Wang
Chair Professor at Department of Mathematics, National Taiwan University

Zhijie Chen

Fuquan Fang, Karsten Grove and Gudlaugur Thorbergsson, Tits geometry and positive curvature, Acta Mathematica, 218 (2017), no. 1, 1–53, mathscidoc: 1803.43001

Fuquan Fang

Fuquan Fang

Professor Fuquan Fang is a chair professor in mathematics at Capital Normal University, China. He received the Ph. D. degree from Jilin University, China in 1991. In 1994 he joined Chern's Institute of Mathematics in China, where he was an associate professor, later a professor and a Chang-Jiang scholar professor until 2005, then he moved to the current position. He is a member of the Chinese Academy of Sciences, was an invited ICM speaker in Geometry in 2014. He was awarded the Qiu-Shi Prize for Outstanding Young Scholars in 1998 and the National Prize of Sciences, China in 2014. He currently serves as a representative of National Parliament Congress, China and a vice president of his university. His interests include algebraic and differential topology, Riemannian Geometry and their interactions.

Karsten Grove

Professor Karsten Grove is the Rev. Howard J. Kenna, C.S.C. Professor of Mathematics at the University of Notre Dame, USA. After spending a couple of years as a research Fellow at the University of Bonn, he received the equivalent of a PhD from the University of Aarhus, Denmark in 1974 and then joined the faculty at the University of Copenhagen. He became Professor at the University of Maryland in 1984 and moved to his current position in 2007. He has been a Foreign member of The Royal Danish Acamedy of Sciences and Letters since 1989, was an invited ICM speaker in Geometry in 1990, received the Humboldt Prize in 2014, and was elected Fellow of the AMS in 2015. His main research areas are in Riemannian and metric geometry at the interface with topology.

Gudlaugur Thorbergsson

Professor Gudlaugur Thorbergsson received his Doctoral degree from the University of Bonn in 1977 where he was an Assistant until 1985 when he became an Associate Professor at IMPA in Rio de Janeiro, Brazil. In 1988, he joined the University of Notre Dame in USA, where he was an Associate Professor and later a Professor. Between 1994 and 2016, he was Professor at the University of Cologne in Germany. He is now Professor Emeritus. His research interests include Singular Riemannian Foliations, Symmetric Spaces, and Lie Groups.

Xuhua He, Geometric and homological properties of affine Deligne-Lusztig varieties, Ann of Math., 179 (2014), Issue 1, 367-404, mathscidoc: 1803.07001

Xuhua He

Xuhua He

Xuhua He earned his B.S. from Peking University in 2001 and earned his Ph.D. from MIT in 2005 under the supervision of George Lusztig. He is currently a Professor of Mathematics at University of Maryland.

Simon Brendle, Pei-Ken Hung and Mu-Tao Wang, A Minkowski type inequality for hypersurfaces in the AntideSit-ter- Schwarzschild manifold, Comm. Pure Appl. Math, 69 (2016), 124-144, mathscidoc: 1608.10034

Pei-Ken Hung

Pei-Ken Hung

Pei-Ken Hung is a C. L. E. Moore instructor at Massachusetts Institute of Technology. He received his PhD degree from Columbia University in the City of New York in 2018. His research interests are curvature flows and stability problems in general relativity.

Simon Brendle

Simon Brendle (born June 1981) is a German mathematician who deals with partial differential equations in differential geometry. Simon Brendle constructed in 2006 counterexamples to Richard Schoen compactness assumption for the Yamabe problem. He also dealt with the Yamabe flow and its convergence behavior. In 2007 he proved with Richard Schoen the differentiable version of the spheres set (Differentiable Sphere Theorem). With FC Marques and André Neves he solved the conjecture of Min -Oo (in three or more dimensions) - it says that an n-dimensional hemisphere with scalar curvature at least n (n- 1) and a Riemannian metric in a neighborhood of edge with the standard metric matches an isometric to the standard metric Riemann metric has. The set can be considered as an analogue in the case of the sphere for the set of positivity of mass in general relativity theory. In 2012 he proved the Lawson conjecture and answered a question about the

uniqueness of self-similar solutions of the Ricci flow.

In 2012 he was awarded the EMS price, and held the Euler Lecture 2012 in Sanssouci. In 2011 he was Lecturer Takagi Japanese Mathematical Society and 2006 Invited Speaker at the International Congress of Mathematicians (ICM) in Madrid (Elliptic and Parabolic problem in conformal geometry) and 2010 with R. Schoen on the ICM in Hyderabad (Riemannian manifolds of positive curvature). 2006 he was a Sloan Fellow. For 2014, he was awarded the Bôcher Memorial Prize.

Mu-Tao Wang

Mu-Tao Wang is Professor of Mathematics at Columbia University. He earned his BS in Mathematics at National Taiwan University in 1988 and his MS from the same institution in 1992. He received a PhD in Mathematics in 1998 from Harvard University. Wang's research is focused in the fields of differential geometry and mathematical physics, specifically general relativity. In the field of general relativity, he is especially known for his work on quasilocal mass-energy; the Wang-Yau quasi-local mass is named in his honor. He has received awards including the 2010 Morningside Mathematics Gold Award, the 2007 Citizen Award.

Semyon Dyatlov and Long Jin, Semi-classical measures on hyperbolic surfaces have full support, Acta Math, 220 (2018), No. 2, 297–339, mathscidoc:1808.03001

Long Jin

Long Jin

Long Jin received his B.S. degree from Peking University in 2010 and his Ph. D. degree from University of Califonia, Berkeley under the supervision of Maciej Zworski in 2015. He started his postdoctoral research at CMSA at Harvard University, then moved to Purdue University as Golomb visiting assistant professor. He joined YMSC at Tsinghua University as an assistant professor in 2018. His research interest lies in analysis and partial differential equations. In particular, he works in microlocal and semiclassical analysis, spectral and scattering theory.

Semyon Dyatlov

Semyon Dyatlov is an Assistant Professor at UC Berkeley. He was born in Novosibirsk, Russia and graduated from Novosibirsk State University in 2008. He obtained his Ph.D. from UC Berkeley in 2013 under the direction of Maciej Zworski; his dissertation studied waves and resonances for Kerr-de Sitter black holes. He applies the methods of microlocal analysis to problems in general relativity, scattering theory, dynamical systems, and most recently quantum

chaos; his recent work employed additional techniques coming from harmonic analysis, fractal geometry, and additive combinatorics, often combined to prove a fractal uncertainty principle. Prof. Dyatlov received the IAMP Early Career Award in 2018.

Junbin Li and Pin Yu, Construction of Cauchy data of vacuum Einstein field equations evolving to black holes, Ann. of Math. (2), 181(2015), no. 2, 699–768, mathscidoc: 1608.10013

Junbin Li

Junbin Li

Junbin Li is currently an associate professor at School of Mathemtaics of Sun Yat-sen University. He received his B.S. degree in mathematics from Sun Yat-sen University and Ph.D. degree in mathematics under the guidance of Professor Xi-Ping Zhu also from Sun Yat-sen University. He is a recipient of the National Science Fund for Excellent Young Scholars in 2018.

Pin Yu

Pin Yu is currently a professor at Tsinghua University. He obtained the Ph.D. from the department on mathematics of Princeton University under the direction of Professor Sergiu Klainerman and Professor Igor Rodnianski. He got the bachelor degree from Peking University in China and master degree from Ecole Polytechnique in France. He is a recipient of the National Science Fund for Excellent Young Scholars in 2015 and for Distinguished Scholars in 2018.

Ryan E. Grady, Qin Li and Si Li, Batalin-Vilkovisky quantization and the algebraic index, Adv. Math. 317 (2017), 575-639, mathscidoc: 1806.22001

Qin Li

Qin Li

Dr. Qin Li is now Assistant Professor at the Department of Mathematics, Southern University of Science and Technology. Dr. Li got his Ph.D. at University of California at Berkeley in 2011. He received his bachelor degree at University of Science and Technology of China.

Si Li

Dr. Si Li is now Professor at Yau Mathematical Sciences Center, Tsinghua University. Dr. Si Li got his Ph.D. at Harvard University in 2011. He received his bachelor and master degree at University of Science and Technology of China.

Ryan Grady

Dr. Grady is now Assistant Professor at the Department of Mathematical Sciences, Montana State University. He got his Ph.D at University of Notre Dame in 2012. He got his bachelor degree at Colorado School of Mines in 2007.

Bong Lian and Shing-Tung Yau, Period Integrals of CY and General Type Complete Intersections, Invent. Math., 191 (2013), 1, 35-89, mathscidoc: 1608.01020

Bong Lian

Bong Lian

Bong Lian, a professor from Brandeis University has made influential and fundamental contributions in mathematical physics, in particular in the theory of vertex algebras and mirror symmetry. He has published well over 70 papers spanning over 30 years in 3 sub- jects: representation theory, Calabi-Yau geometry, and string theory. Here is an outline of his major contributions. His PhD thesis, published in 1991, on semi-infinite cohomology theory has become a primary tool in the representation theory of the Virasoro algebra. In a foundational paper in 1994, he and Zuckerman gave the first mathematical formulation of a topological vertex operator algebra, and constructed a new invariant, now known as the Lian-Zuckerman algebra, for every such TVOA. The paper provided a conceptual framework for the Witten ground ring of the c = 1 string theory, and has been very influential in later developments. His joint work in 2004-7 with Linshaw and Song on chiral equivariant cohomology, gave a new topological invariant for Lie group actions on manifolds that generalizes the Borel-Cartan theory. In their 1994 paper, Lian and Yau using their nonlinear differential systems in characteristic p, gave an elementary proof that the famous quintic mirror conjecture of Candelas et al implies Clemen's divisibility conjecture for infinitely many degrees. With Hosono, Todorov and Yau, Lian solved the large complex structure limit problem for an important class of Calabi-Yau manifolds. In a seminal paper in 1995, Hosono-Lian-Yau gave the general solution formula for the GKZ system for Calabi-Yau toric hypersurfaces, and announced their hyperplane conjecture, which generalizes the quintic mirror conjecture. Soon after, the latter was proved independently by Lian-Liu-Yau, and Givental. In their proof, Lian et al developed a general technique called mirror principle which they also applied to settle the genus-zero mirror conjecture for toric complete intersections in full generality. In 2003, Hosono, Lian, Oguiso and Yau gave a counting formula for Fourier-Mukai partners, and settled a longstanding problem of Shioda on abelian and K3

surfaces. In 2010, joint with Song and Yau, Lian developed an entirely new approach, called tautological systems, to study the Riemann-Hilbert problem for period integrals. In 2014, joint with Bloch, Huang, Srinivas, Yau and Zhu, Lian has solved the completeness problem for tautological systems of period integrals, in many important cases. His work on tautological system has also led to a construction of the Jacobian ring for vector bundle zero loci in a general G-variety by Huang, Lian, Yau and Yu. As an application, new cases of the Hodge conjecture was proved as a result. Generalizing old work of Dwork, Katz and others, Lian et al have shown that periods of certain Calabi-Yau hypersurfaces can be given precisely in terms their Hasse-Witt invariants. In their latest work, Hosono, Lian, Takagi and Yau, discovered a new class of mirror Calabi-Yau manifolds they call fractional complete intersections (FCI). They further show that the B-model of FCI families can be completely solved using the generalized Frobenius method of Hosono-Lian-Yau.

Lian received a John Simon Guggeinheim Fellowship in Mathematics in 2003. He was awarded a Chern Prize at the 2013 ICCM in Taipei.

Shing-Tung Yau

Shing-Tung Yau was born in Shantou, China. After he studied mathematics at the Chinese University of Hong Kong, he went to the University of California, Berkeley in 1969. At the age of 22, Yau was awarded the Ph.D. degree under the supervision of Shiing-Shen Chern. After a year as a member of the Institute for Advanced Study, Princeton, and two years at the State University of New York at Stony Brook, he went to Stanford University. Since 1987, he has been a Professor of Mathematics at Harvard University. Since 2013, he is also appointed a Professor of Physics at Harvard.

Shing-Tung Yau's work is in geometry in the broadest sense. He was the first person to combine differential geometry and analysis, and used their interaction to solve longstanding problems in both subjects. Yau's work opened up new directions, set foundations and changed people's perspectives towards mathematics and their applications in physics and computer science. For example, his proof of the positive energy theorem in general relativity demonstrated, sixty years after its discovery, that Einstein's theory is consistent and stable. His proof of the Calabi conjecture gave solutions of multiple well-known open problems in algebraic geometry and also allowed physicists to show that string theory is a viable candidate for a unified theory of nature. Calabi-Yau manifolds are among the standard toolkit for string theorists today. Professor Yau also spends an enormous amount of energy

to train young mathematicians at every level. He has been directors of the Institute of Mathematical Sciences at the Chinese University of Hong Kong, the Morningside Center of Mathematics of the Chinese Academy of Sciences, Center of Mathematical Sciences in Zhejiang University. In December 2009, Shing-Tung Yau was invited to serve as the inaugural director of the Mathematical Sciences Center at Tsinghua University (Renamed Yau Mathematical Sciences Center in 2015).

Professor Yau also spends an enormous amount of energy to train young mathematicians at every level. He has been directors of the Institute of Mathematical Sciences at the Chinese University of Hong Kong, the Morningside Center of Mathematics of the Chinese Academy of Sciences, Center of Mathematical Sciences in Zhejiang University. In December 2009, Shing-Tung Yau was invited to serve as the inaugural director of the Mathematical Sciences Center at Tsinghua University (Renamed Yau Mathematical Sciences Center in 2015).

Yau's Major Prizes and Awards
1981, Oswald Veblen Prize
1982, Fields Medal
1984, MacArthur Fellow
1994, Crafoord Prize
1997, United States National Medal of Science
2003, China International Scientific and Technological Cooperation Award
2010, Wolf Prize in Mathematics and Asian American Engineer of the Year (AAEOY)
2018, MG15 Award (The Fifteenth Marcel Grossmann Award).

Arthur M. Jaffe and Zhengwei Liu, Mathematical picture language program, Proc. Natl. Acad. Sci. USA 115 (2018), no. 1, 81–86, mathscidoc: 1806.13001

Zhengwei Liu
Zhengwei Liu is a postdoctoral fellow in the departments of Mathematics and of Physics at Harvard University and will be a Professor of Mathematics in Tsinghua University. He received his B.S. in mathematics from Peking University in 2009 and his Ph.D. in mathematics in 2015 from Vanderbilt University under the advice of Vaughan Jones.

His research interest is subfactor theory in operator algebras and related areas in mathematics and physics. He solved several open questions in various areas, including a question of Dietmar Bisch and Uffe Haagerup posed in 1994, a question of Victor Kac posed

in 1994, and a question of Roberto Longo posed in 2003.

Arthur Jaffe

Arthur Jaffe is the Landon T. Clay Professor in the departments of mathematics and of physics at Harvard University. He has made fundamental contributions to the development quantum theory and mathematical physics, including solving long-standing problems by showing the mathematical existence of non-trivial relativistic quantum fields, as well as the existence of phase transitions for quantum fields.

He served as the chief editor of Communications in Mathematical Physics for 21 years (1979-2001). He was also the president of the American Mathematical Society (1997–1998), and the President of the International Association of Mathematical Physics (1991-1996). He is an honorary member of the Royal Irish Academy and a member of the US National Academy of Sciences.

Zhengwei Liu

Pierre Degond, Amic Frouvelle and Jian-Guo Liu, Macroscopic limits and phase transition in a system of self-propelled particles, Journal of Nonlinear Science, 23 (2013), 427–456, mathscidoc: 1702.22005

Jian-Guo Liu

Jian-Guo Liu is currently a professor of Mathematics and Physics at Duke university. He obtained his B.S. in1982, M.S. in 1985 at from Fudan University, and he obtained a Ph.D. in 1990 from UCLA. He was a postdoc at Courant Institute, an assistant professor at Temple University, an associate professor and then professor at University of Maryland College Park. He works in applied mathematics, PDE, kinetic theory, computational fluid dynamics, numerical analysis, fluid dynamics, complex fluids, emergent behavior and self-organization, etc. He published over hundred research papers and he is a fellow of AMS.

Pierre Degond

Pierre Degond is currently a Chair Professor in Applied Mathematics at Imperial College London. He was trained at the Ecole Normale Supérieure rue d'Ulm in Paris and he was as a Junior CNRS Researcher at Ecole Polytechnique, Palaiseau, a full Professor in Ecole Normale Superieure Cachan, and a Senior CNRS Researcher at the Institut de Mathématiques de Toulouse where he founded the Applied Math group.

He has been awarded the Jacques-Louis Lions prize 2013 of the French Academy of Sciences and he is a Royal Society Wolfson Research Merit Award holder. He is an invited speaker at ICM 2018

Jian-Guo Liu

in Rio.

He is interested in collective dynamics, decision making and self-organization in complex systems arising from biology and social sciences. His methods combine analysis, asymptotic theory and multiscale numerical techniques. His earlier interests were in plasma physics, rarefied gas dynamics and semiconductor modeling.

Amic Frouvelle

Amic Frouvelle is an Assistant Professor at Université de PARIS - DAUPHINE. He was trained at the Ecole Normale Supérieure rue d'Ulm in Paris and he obtained a PhD at Université Paul Sabatier, Toulouse in 2011. Amic is mainly working in kinetic theory of complex systems, and in particular in large systems of interacting self-propelled particles, such as fish schools or flocks of bird.

Peng Shan, Michela Varagnolo and Eric Vasserot, On the center of quiver Hecke algebras, Duke Math Journal, 166 (2017), No. 6, 1005-1101, mathscidoc: 1806.17001

Peng Shan

Peng Shan is a professor at Yau Mathematical Sciences Centre at Tsinghua University. Her research interest is in geometric representation theory and categorifications. She studied at Tsinghua University and Ecole Normale Supérieure. After receiving her PhD from University Paris-Diderot in 2011, she worked as a researcher at the French National Scientific Research Centre (CNRS, 2011-2017) and as a CLE Moore Instructor at MIT (2012-2013).

Michela Varagnolo

Michela Varagnolo is a professor at University Cergy Pontoise. Her research interest is in representation theory and categorifications. She obtained her PhD at University of Pisa in 1992. After, she became researcher at University of Ferrara (1992-1994) and University of Roma Tor Vergata (1994-1997) in Italy and then professor at University of Cergy Pontoise in France since 1997. She was an invited speaker at the ICM in Seoul in 2014.

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Eric Vasserot is a professor at University Paris Diderot. His research interest is in geometric representation theory and categorifications. He was a student at the Ecole Normale

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Supérieure in Paris, and then a researcher at the French National Scientific Research Centre (CNRS) in Paris. He became a professor at University of Cergy-Pontoise in 1995, and moved to University Paris-Diderot in 2005. He was an invited speaker at the ICM in Seoul in 2014.

Ye Tian, Congruent numbers and Heegner points, Camb. J. Math. 2 (2014), no. 1, 117–161, mathscidoc: 1705.24003

Ye Tian

Ye Tian

Prof Ye Tian received his PhD in mathematics from Columbia University in 2003. He worked for the Institute for Advanced Study in Princeton and McGill University as Post-Doctorate before joining AMSS,CAS in 2006. Tian is currently a Professor of AMSS,CAS.

Prof Tian's research interests lie at the Arithmetic Geometry and Number Theory. Joint with his collaborators, Prof Tian has solved some long-standing open problems on Birch and Swinnerton-Dyer conjecture and Diophantine equations. He was awarded Morningside Gold Metal of Mathematics and Ramanujan Prize in 2013.

Yuan-Pin Lee, Hui-Wen Lin and Chin-Lung Wang, Towards A+B theory in conifold transitions for Calabi-Yau threefolds, Jour. Diff. Geom, 110 (2018), Number 3, 495-541 2018, mathscidoc: 1610.01006

Chin-Lung Wang

Chin-Lung Wang

Chin-Lung Wang received his PhD degree from Harvard University in 1998. He had worked in National Taiwan University (NTU), National Tsing-Hua University and National Central University (NCU), and became a professor at NTU since 2008. Wang's major research interests lie in algebraic geometry and related topics in quantum geometry and non-linear analysis. His earlier works focused on K-equivalence relation in birational geometry and geometry of Calabi—Yau moduli spaces. Currently he works on (1) *analytic continuations of quantum cohomology* under birational maps and transitions, (2) *generalized Lame curves* associated to generalized Lame equations at critical parameters.

Yuan-Pin Lee

Yuan-Pin Lee received his PhD degree from UC Berkeley in 1999.

He had worked in UCLA, IPAM, Princeton University, and then in University of Utah since 2003. He became an associate professor in 2006 and a professor in 2011. Lee's current research interests are in the general areas of algebraic geometry and mathematical physics. More specifically he is working on Gromov–Witten theory and its relations and applications to birational geometry, Hodge theory, K-theory, symplectic topology, integrable systems, representation theory, and mirror symmetry.

Hui-Wen Lin

Hui-Wen Lin received her PhD degree from National Taiwan Normal University in 1998. She had worked in Academia, NCTS (Hsinchu), NCU, and became a professor at NTU in 2008. Lin's earlier works focused on toric geometry, crepant resolutions of hypersurface singularities and related problems in algebra. Currently she works on (1) *analytic continuations of quantum cohomology* under birational maps and transitions, (2) *tautological systems and mirror symmetry under conifold transitions of Calabi—Yau 3-folds* arising from toric degenerations of Grassmannians.

Hao Wu, Alternating ARM exponents for the critical planar ising model, The Annals of Probability, 46 (2018), no. 5, 2863–2907, mathscidoc: 1802.22002

Hao Wu

Hao Wu

The study on Ising model has a long history: it was introduced by Lenz in 1920 which aimed to explain the phase transition phenomenon on ferromagnet observed by Pierre in 1895.

It was conjectured by physicists that the 2D critical Ising model become conformally invariant in the scaling limit. The conjecture was proved by Smirnov and Chelkak in 2010.

Based on their work, H. Wu calculated the arm exponents in the Ising model using SLE as a tool. The results have many applications. In particular, the formulae confirms the well-known KPZ formula predicted by physicists in the setting of Liouville quantum gravity.

Weiwei Wu, Exact lagrangians in a_n-singularities, Math. Ann, 359 (2014), 153-168, mathscidoc: 1703.34002

Weiwei Wu

Weiwei Wu

Professor Weiwei Wu was graduated from Peking University in Mathematics on 2006 and University of Minnesota, Ph.D. in Mathematics from 2006-2012. He was FRG postdoc (symplectic geometry) at Michigan State University, East Lansing from 2012-2014 and CNRM-ISM postdoc at Universite de Montreal from 2014-2016. Now he is an Assistant Professor at University of Georgia from 2016.

Damin Wu and Shing-Tung Yau, Negative holomorphic sectional curvature and positive canonical bundle, Invent. Math., 204 (2016), 595-604, mathscidoc: 1610.10017

Damin Wu

Damin Wu

Professor Damin Wu received his Ph. D. at MIT in 2005. He has been a professor at University of Connecticut since 2018 and currently a member at the Institute for Advanced Study in Princeton. Before those appointments, he spent one year as a postdoc fellow at Stanford and held a tenure track position at the Ohio State University.

Shing-Tung Yau

Professor Shing-Tung Yau received his Ph. D at UC Berkeley in 1971. He is the William Caspar Graustein Professor at Harvard. He is well-known for solving a number of long standing conjectures including the Calabi conjecture, positive mass conjecture, and Frankel conjecture. Among many awards he received are Fields medal, Crafoord Prize, National Medal of Science, and Wolf Prize.

T. Tony Cai, Zongming Ma and Yihong Wu, Sparse PCA: Optimal rates and adaptive estimation, The Annals of Statistics, 41 (2013), no. 6, 3074–3110, mathscidoc: 1706.33001

Yihong Wu

Yihong Wu is an Assistant Professor in the Department of Statistics and Data Science at the Yale University. He received a B.E degree from Tsinghua University in 2006 and Ph.D. degree from the

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Princeton University in 2011. He was a postdoctoral fellow with the Statistics Department in the Wharton School at the University of Pennsylvania from 2011 to 2012 and an assistant professor in the Department of ECE at the University of Illinois at Urbana-Champaign from 2013 to 2016. His research interests are in the theoretical and algorithmic aspects of high-dimensional statistics and information theory. Dr. Wu was a recipient of the NSF CAREER award in 2017, and the Alfred Sloan Fellowship in Mathematics in 2018.

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Tony Cai is the Daniel H. Silberberg Professor and Professor of Statistics at the Wharton School of the University of Pennsylvania. He is the recipient of the 2008 COPSS Presidents' Award, a Fellow and Medallion Lecturer of the Institute of Mathematical Statistics, and was a Co-Editor for The Annals of Statistics (2010-2012). He is/was an associate editor for Journal of the Royal Statistical Society (Series B), Journal of American Statistical Association, and The Annals of Statistics. His current research interests include high dimensional statistics, statistical machine learning, large-scale inference, and statistical decision theory.

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Zongming Ma received the B.S. degree in Mathematics from Peking University, Beijing, China, in 2005 and the Ph.D. degree in Statistics from Stanford University, Stanford, CA, in 2010. He has been an assistant professor in the Department of Statistics, The Wharton School, University of Pennsylvania, Philadelphia, PA, since 2010. His research interest is in high-dimensional statistics. Dr. Ma was a recipient of the NSFCAREER Award in 2014.

Guozhen Wang and Zhouli Xu, The triviality of the 61-stem in stable homotopy groups of spheres, Annals of Math, 186 (2017), no. 2, 501–580, mathscidoc: 1705.02002

Zhouli Xu and Guozhen Wang

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09/2004 - 07/2008 Peking University, Beijing, China. Bachelor of Science.
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Alex Blumenthal, Jinxin Xue and Lai-Sang Young, Lyapunov exponents for random perturbations of some area-preserving maps including the standard map, Ann. of Math. (2) 185 (2017), no. 1, 285–310,   mathscidoc: 1703.11002

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Jinxin Xue

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Lai-Sang Young

Lai-Sang Young, Henry & Lucy Moses Professor of Science at New York University's Courant Institute of Mathematical Sciences

Xiaokui Yang, RC-positivity, rational connectedness and Yau's conjecture, Cambridge Journal of Math, 6 (2018), no. 2, 183–212, mathscidoc: 1708.01002
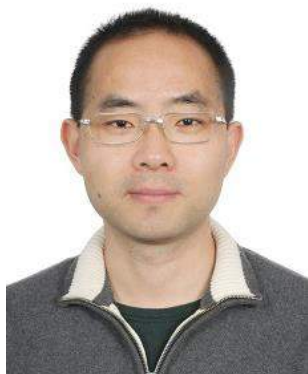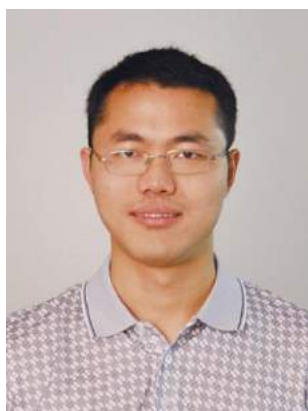
Xiaokui Yang

Xiaokui Yang got his Doctor degree at UCLA in 2012 and now he is a professor at Chinese Academy of Sciences. He works on complex differential geometry, complex algebraic geometry and geometric analysis.

Xiaokui Yang

Xinyi Yuan and Shou-Wu Zhang, On the averaged Colmez conjecture, Annals of Math. 187 (2018), 533-638. mathscidoc:1807.24001

Xinyi Yuan

Xinyi Yuan, currently an associate professor at UC Berkeley, specializing in number theory and arithmetic geometry. He received a bachelor's degree from Peking University in 2003, and a PHD from Columbia University in 2008. He was a Clay research fellow from 2008 to 2011, and was an assistant professor at Princeton University from
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Xinyi Yuan

Yu Wang, Jinshan Zeng, Zhimin Peng, Xiangyu Chang and Zongben Xu, Linear convergence of adaptively iterative thresholding algorithms for compressed sensing, IEEE,Trans. Signal Process. 63 (2015), no. 11, 2957–2971, mathscidoc: 1701.27011

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Jinshan Zeng

Jinshan Zeng received his Ph.D. degree in applied mathematics from Xi'an Jiaotong University in 2015. He was ever with the department of mathematics in UCLA and HKUST as a visiting scholar from Nov. 2013 to Nov. 2014 and from April 2017 to March 2018, respectively. He is currently an associate professor at the school of computer and information engineering in Jiangxi Normal University. His current research interests include sparse optimization, distributed optimization and deep learning.

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Yu Wang

Yu Wang received his bachelor and master degree in Applied Mathematics from Xi'an Jiaotong University in 2013 and 2016, respectively. He is currently pursuing PhD. degree in statistics at UC Berkeley.

Zongben Xu

Zongben Xu received his Ph.D. degree in mathematics from Xi'an Jiaotong University, China, in 1987. He now serves as the Chief Scientist of National Basic Research Program of China (973 Project), and Director of the Institute for Information and System Sciences of the university. He is owner of the National Natural Science Award of China in 2007, and winner of CSIAM Su Buchin Applied Mathematics Prize in 2008. He was elected as member of Chinese Academy of Science in 2011. His current research interests include intelligent information processing and applied mathematics.

Zhigen Zhao

Zhigen Zhao

Zhigen Zhao is Associate Professor of Department of Statistical Science at Temple University. Dr. Zhao received his BS degree in mathematics in 2003 from Nankai University and Ph.D. in mathematics in 2009 from Cornell University. Dr. Zhao received multiple NSF grants from USA. Dr. Zhao's research interests include Bayesian/empirical Bayesian statistics, high dimensional data analysis, multiple comparison, bioinformatics, selective confidence intervals.

Qian Lin

Qian Lin is Assistant Professor of center of statistical science at Tsinghua University. Dr. Lin received his BS and master degrees in mathematics in 2003 and 2006 from Peking University and Ph.D in mathematics in 2010 from Massachusetts Institute of Technology.

Jun Liu

Jun Liu is Professor of Statistics at Harvard University, with a joint appointment in Harvard School of Public Health. Dr. Liu received his BS degree in mathematics in 1985 from Peking University and Ph.D. in statistics in 1991 from the University of Chicago. He held Assistant, Associate, and full professor positions at Stanford University from 1994 to 2003. Dr. Liu received the NSF CAREER Award in 1995 and the Mitchell Award in 2000. He was selected as a Medallion Lecturer in 2002, a Bernoulli Lecturer in 2004, a Kuwait Lecturer of Cambridge University in 2008; and elected to Fellow of the Institute of Mathematical Statistics and Fellow of the American Statistical Association in 2004 and 2005, respective. In 2002, he won the prestigious COPSS Presidents' Award (given annually to one individual under age 40). In 2010, he was awarded the Morningside Gold Medal in Applied Mathematics (once every 3 years to an individual of Chinese descent under age 45). He was honored with the Outstanding Achievement Award in 2012, and the Pao-Lu Hsu Award (once every 3 years) in 2016 by the International Chinese Statistical Association. In 2017, he was recognized by the Jerome Sacks Award for outstanding Cross-Disciplinary Research.

Dr. Liu and his collaborators introduced the statistical missing data formulation and Gibbs sampling strategies for biological sequence

motif analysis in early 1990s. The resulting algorithms for protein sequence alignments, gene regulation analyses, and genetic studies have been adopted by many researchers as standard computational biology tools. Dr. Liu has made fundamental contributions to statistical computing and Bayesian modeling. He pioneered sequential Monte Carlo (SMC) methods and invented novel Markov chain Monte Carlo (MCMC) techniques. His theoretical and methodological studies on SMC and MCMC algorithms have had a broad impact in many areas. Dr. Liu has also pioneered novel Bayesian modeling techniques for discovering nonlinear and interactive effects in high-dimensional data. Dr. Liu has served on numerous government's grant review panels and editorial boards of leading statistical journals, including the co-editorship of JASA from 2011-2014. Dr. Liu has published more than 250 research articles in leading scientific journals, mentioned more than 25 postdoctoral fellows, and graduated 30 PhD students.

Binyong Sun and Chenbo Zhu, Conservation relations for the local theta correspondence, Journal of AMS, 28 (2015), no. 4, 939-983, mathscidoc: 1705.30002

Chenbo Zhu

Chenbo Zhu
Chen-bo Zhu is Professor at the Department of Mathematics at the National University of Singapore (NUS). Zhu received his BSc from Zhejiang University in 1984 and his PhD from Yale University in 1990. Zhu's research interests are in representation theory of real reductive groups.

Binyong Sun
Binyong Sun is Professor at the Academy of Mathematics and Systems Science at the Chinese Academy of Sciences (CAS). Sun received his BSc from Zhejiang University in 1999 and his PhD from the Hong Kong University of Science Technology in 2004. Sun's research interests are in representation theory of reductive groups over local fields, as well as L-functions.

Awardees of Best Paper Award (若琳獎)

1	Gang Liu, Gromov-hausdorff limits of kahler manifolds and the finite generation conjecture, Ann. of Math, 184 (2016), no. 3, 775–815, mathscidoc: 1608.10012
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