清華大学 求真书院
Qiuzhen College, Tsinghua University

BIMAS 北京雁栖湖应用数学研究院
Beijing Institute of Mathematical Sciences and Applications

清華大学 丘成桐数学科学中心
Yau Mathematical Sciences Center, Tsinghua University

青年科学家北京行
Beijing Tour for Young Scientists

CALABI-YAU at 50
LEGACY AND FUTURE

CONFERENCE PROGRAM

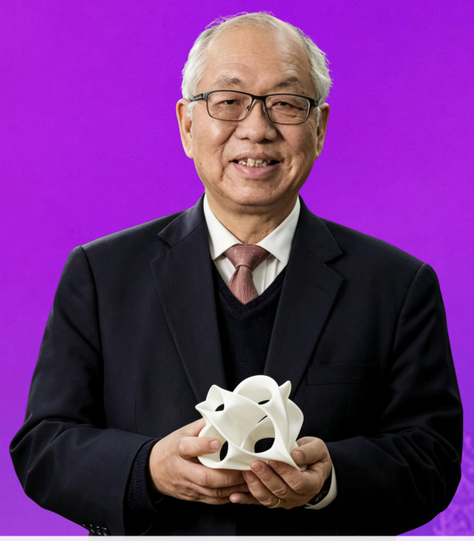
September 7-11, 2026
Beijing, China

CALABI-YAU at 50
LEGACY AND FUTURE

Date: Sep. 7-10, 2026
Venue: Qiuzhen Auditorium, Qiuzhen College, Tsinghua University

Date: Sep. 10-11, 2026
Venue: B3 & A6-101, BIMSA

Zoom ID: 388 528 9728
Password: BIMSA
Webpage: https://bimsa.net/event/cy50/



Shing-Tung Yau

President of BIMSA
Dean of Qiuzhen College, Tsinghua University
Director of YMSC, Tsinghua University

Shing-Tung Yau has made transformative contributions to differential geometry and geometric analysis. In 1976, he proved the Calabi conjecture, and in 1979, jointly with Richard Schoen, the Positive Mass Theorem in general relativity. His work has profoundly influenced mathematics and theoretical physics. Yau received the Fields Medal in 1982; his many other honors include the U.S. National Medal of Science (1997), the Wolf Prize in Mathematics (2010), and the Shaw Prize in Mathematical Sciences (2023).

The Calabi Conjecture and Calabi–Yau Manifolds

In 1954, Eugenio Calabi conjectured the existence of Kähler metrics with prescribed Ricci curvature on compact Kähler manifolds. In particular, a compact Kähler manifold with vanishing first Chern class should admit a unique Ricci-flat Kähler metric in each Kähler class. In 1976 — fifty years ago — Yau proved the conjecture by solving a highly nonlinear complex Monge–Ampère equation, laying the foundation for what is now known as Calabi–Yau geometry.

Yau's theorem has had profound consequences in mathematics and physics. It became foundational to mirror symmetry, which relates the complex and symplectic geometry of pairs of Calabi–Yau manifolds and has led to developments including homological mirror symmetry, the Strominger–Yau–Zaslow conjecture, and Gromov–Witten and Donaldson–Thomas theory.

In physics, Calabi–Yau threefolds became central to string theory after Candelas, Horowitz, Strominger, and Witten showed in 1985 that compactification on such spaces can preserve supersymmetry in four dimensions. They have since provided a fundamental geometric framework for the six compact dimensions of superstring theory. Fifty years on, Calabi–Yau geometry remains a vibrant frontier where mathematics and theoretical physics meet.

ORGANIZERS

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Brian Greene
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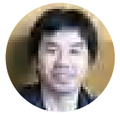

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Peking University

Kai Xu
YMSC

SHUTTLE BUS SCHEDULE

Sep. 6

- Liaoning Hotel 18:30 → Qiuzhen College 19:10
- Qiuzhen College 21:00 → Liaoning Hotel 21:30

Sep. 7

- Liaoning Hotel 07:50 - Qiuzhen College 08:30
- Qiuzhen College 12:30 → Xichunyuan Canteen 12:40 (Speaker Lunch)
- Xichunyuan Canteen 13:40 → Qiuzhen College 13:50
- Qiuzhen College 17:00 → Xichunyuan Canteen 17:10 (Speaker Dinner)
- Xichunyuan Canteen 18:30 → Liaoning Hotel 19:00

Sep. 8

- Liaoning Hotel 08:25→ Qiuzhen College 09:05 (Group Photo at 9:10)
- Qiuzhen College 12:30 → Xichunyuan Canteen 12:40 (Speaker Lunch)
- Xichunyuan Canteen 13:40 → Qiuzhen College 13:50
- Qiuzhen College 17:00 → Liaoning Hotel 17:30 (Banquet)

Sep. 9

- Liaoning Hotel 08:40 → Qiuzhen College 09:20
- Qiuzhen College 12:30 → Xichunyuan Canteen 12:40 (Speaker Lunch)
- Xichunyuan Canteen 13:40 → Qiuzhen College 13:50
- Qiuzhen College 17:00 → Liaoning Hotel 17:30

Sep. 10

- Liaoning Hotel 08:40 → Qiuzhen College 09:20
- Qiuzhen College 11:30 → Xichunyuan Canteen 11:40 (Speaker Lunch)
- Xichunyuan Canteen 12:40 → Qiuzhen College 12:50 (Switch shuttles with your luggage and head to Huairou.)

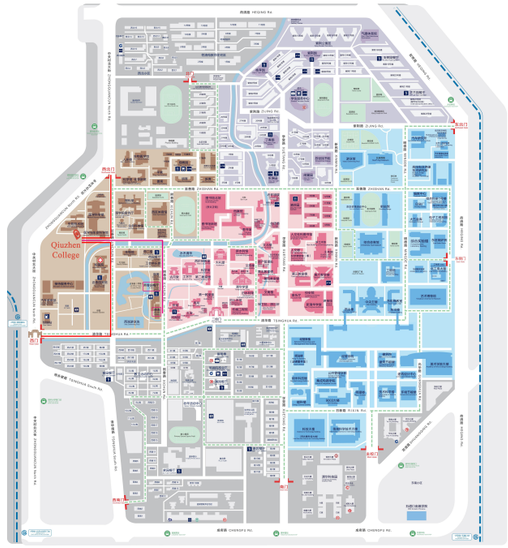
- Qiuzhen College 13:00 → Huairou Science City 14:20
- Huairou Science City 15:50 → Marriott Hotel 16:00 → Aloft 16:10
- Marriott Hotel & Aloft 16:35 → BIMSA 16:50
- BIMSA B3 19:30 → Marriott Hotel 19:45→Aloft 19:55

Sep. 11

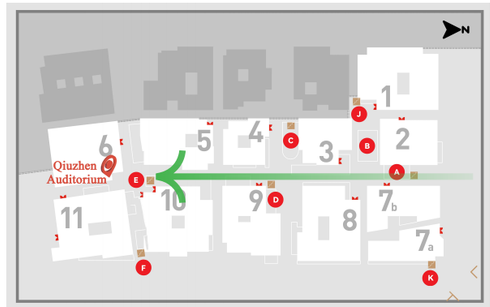
- Marriott Hotel 09:05 → BIMSA A6 09:20
- BIMSA A6 17:00 → Restaurant (Cafeteria) 17:15
- Restaurant 18:30 → Huairou Science City Urban Living Room，Block A-E3 lecture hall 18:35 (Walk)
- E3 lecture hall 20:30 → Marriott Hotel 20:35 (Walk)

- Aloft Hotel 09:05 → BIMSA A6 09:20 (50-seat)
- BIMSA A6 17:00 → Restaurant (Cafeteria) 17:15
- Restaurant 18:30 → Huairou Science City Urban Living Room, Block A-E3 lecture hall 18:35 (Walk)
- Restaurant 20:30 → Aloft Hotel 20:40 (Shuttle)
- E3 lecture hall 20:30 → Aloft Hotel 20:50(Walk)

MAPS



▲ Map of Tsinghua University



请沿着绿色箭头走到E楼梯
下至LG 层(地下一层)会场
Please follow the green arrow to
Stair E then go down to G level

▲ Map of Qiuzhen College, Tsinghua University

Map of BIMSA ▶

ADDRESSES OF VENUES AND HOTELS

Northwest Gate, Tsinghua University
Northwest Gate, Tsinghua University, No. 30 Shuangqing Road, Haidian District, Beijing

Liaoning International Hotel
No. 2 Jia, North 4th Ring West Road, Haidian District, Beijing

Beijing Marriott Hotel Huairou
Building 12, No. 3 Yard, Yongle North 1st Street, Huairou District, Beijing

BIMSA A6
Building A6, No. 544, Hefangkou Village Huaibei Town, Huairou District, Beijing

Wenjin Hotel
Building 5, Yard 1, Zhongguancun East Road, Haidian District, Beijing

Aloft Hotel
Building No. 3, compound No. 9, Yongle North 2 Street, Huairou District, Beijing

Top: venue addresses. Middle: hotels near Tsinghua. Bottom: hotels near BIMSA.
Scan the QR code for navigation links. Tap "Go" or "Map" for directions, or "Get a Ride" to book a car.

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SCHEDULE

TIME	Sep. 7	Sep. 8	Sep. 9	Sep. 10	Sep. 11
08:45-09:30	*Opening Ceremony* *Prof. S.T. Yau's Lecture*				
Chair	K. Lee	N. Reshetikhin	C.M. Chang	S. Li	B. Haghighat
09:30-10:20	B. Greene	Y. Soibelman*	M. Douglas*	M. Abouzaid	H. Ooguri
10:20-10:40	*Tea Time (Poster Session on Monday and Tuesday)*				
10:40-11:30	M. Cvetič	S. Hosono	Y.H. He	C. Leung	H.C. Kim
11:30-12:20	T. Weigand	C. Doran	R. Seong		X. Gao
12:30-14:00	*Lunch*				
Chair	W. Song	L.Y. Hung	W. Yan		A.Sheshmani
14:00-14:50	N. Nekrasov	L. Katzarkov	J. Heckman	*Excursion*	M. Romo
14:50-15:10	*Tea Time (Poster Session on Monday and Tuesday)*				
15:10-16:00	J. Gu	S.J. Lee	B. Haghighat		C.L. Wang*
16:00-16:50	Y.N. Wang	K. Xu	J. Wang		P. Candelas
Sep. 6 19:30-21:00 Public Talk by B. Greene	17:30-18:30 Speaker Dinner	17:30-21:00 Banquet		17:00-17:30 Unveiling Ceremony 17:30-19:00 Banquet & Show	17:00-18:30 Dinner 19:00-20:30 Public Talk by H. Ooguri

NOTES

* Indicates the talk is delivered via Zoom.

Public talk by Prof. Brian Greene on September 6 at Qiuzhen College, Tsinghua University.

Academic talks on September 7–10 at Qiuzhen College, Tsinghua University.

Excursion to Huairou Science City on the afternoon of September 10.

Unveiling ceremony of the Calabi–Yau space sculpture at BIMSA.

Academic talks at room A6-101 of BIMSA on September 11.

Public talk by Prof. Hiroshi Ooguri at the Huairou Science City Urban Living Room, Lecture Hall A-E3, on September 11.

PROGRAM

Sep. 6, 2026

19:30-21:00 • **Brian Greene (Columbia University)**

UNTIL THE END OF TIME

The iconic photograph of Earth as a "pale blue dot", captured by Voyager I, reveals our planet's delicate presence against the vastness of space. Extending this perspective across time—from the Big Bang to the universe's distant future—deepens our appreciation of humanity's fleeting yet luminous moment in the cosmic story. Until the End of Time invites audiences on a visually rich journey to grasp our place in that cosmic unfolding.

Sep. 7, 2026

09:10-09:30 • **Shing-Tung Yau (Tsinghua University & BIMSA)**

Calabi-Yau Manifolds Fifty Years — My Recollection

Professor Shing-Tung Yau recalls his 1976 proof of the Calabi conjecture, which established the existence of Calabi–Yau manifolds and Ricci-flat metrics. The theorem bridges differential geometry and algebraic geometry, helped inspire mirror symmetry, and has become central to string theory. Yau reflects on stability, the SYZ conjecture, and the promising connections between Calabi–Yau geometry and number theory.

09:30-10:20 • **Brian Greene (Columbia University)**

A Half Century of Calabi-Yau Manifolds

Yau proved Calabi's conjecture in 1976, a triumph in pure geometry. Within a decade, Calabi-Yau manifolds became the foundation of string compactification. I will trace highlights of what followed — mirror symmetry, rational curve counts, topology change — with some personal reflections along the way.

10:40-11:30 • **Mirjam Cvetič (University of Pennsylvania)**

Symmetry Theories, Anomalies and η Invariants (Geometric Engineering and Quiver Approaches)

We present progress on calculation of anomaly coefficients for higher symmetries in quantum field theories (QFTs) both from the perspective of geometric engineering and quiver approaches. Within geometric engineering this data is governed by η-invariants extracted from the boundary geometry on non-compact Calabi-Yau space X. Quiver approach provides a complementary way to extract this data from the path algebra of branes probing X. We present explicit results for one-form anomaly coefficients in five-dimensional supersymmetric QFTs, engineered in M-theory on classes non-compact Calabi-Yau three-folds X. The quiver approach applies also in situations where the counterpart geometric computation is either combinatorially unwieldy or unknown, such as cones over Einstein-Sasaki spaces.

11:30-12:20

Timo Weigand (University of Hamburg)

Stable degenerations of Calabi-Yau manifolds and their role in quantum gravity

Compactifications of string theory on Calabi-Yau threefolds give rise to well-known examples of effective supergravity theories in four dimensions with a consistent UV completion in quantum gravity. The vector multiplet moduli space of a 4d N=2 supergravity theory is described by a special Kähler manifold, and a natural open question is which such special Kähler manifolds come from Calabi-Yau compactifications or, more generally, from a quantum gravity theory. In this talk, we explain how recent and upcoming mathematical results on asymptotic real Hodge theory guarantee that the asymptotic behaviour of the couplings of general 4d N=2 supergravity theories satisfy basic necessary conditions for consistency with quantum gravity, in particular with the Emergent String Conjecture. However, quantum gravity poses additional requirements beyond asymptotic Hodge theory alone. We explain how the theory of stable degenerations guarantees that these requirements are satisfied in supergravity theories deduced from Calabi-Yau compactifications. If time permits, we comment on the role of quantum obstructions in extending these results to situations with only 4d N=1 supergravity.

14:00-14:50

Nikita Nekrasov (Stony Brook University)

Calabi–Yau Geometry, Z-Theory, and the Hydrodynamic Paradigm

I will discuss several ways in which geometric structures associated with Calabi–Yau manifolds become dynamical. Beginning with ongoing work with David Gross on mixed-signature world-sheet metrics, I will propose a target-space analogue in which complex structures are accompanied by split structures—transverse foliations with volume forms—which make Kodaira–Spencer gravity Chern–Simons-type theory of volume-preserving diffeomorphisms. I will revisit the 2004 Z-theory conjectures connecting the A- and B-models on the same Calabi–Yau manifold, their relation to the now-proven MNOP correspondence, and polynomial formulations of Hitchin's six- and seven-dimensional theories. Finally, I will relate these ideas to recent work with Paul Wiegmann formulating relativistic hydrodynamics as an intersection problem and to its possible quantization by topological-field-theoretic methods.

15:10-16:00

Jie Gu (顾杰 , Southeast University)

BPS spectrum from resurgent topological string

Perturbative free energies in topological string theory are divergent, and they require non-perturbative corrections. It has been conjectured that these non-perturbative corrections are related to stable D-brane bound states in associated type II superstring. We provide substantial evidences for this conjecture by calculating non-perturbative contributions using resurgence theory and extended holomorphic anomaly equations for models of both compact and local CYs. We also discuss modular properties of non-perturbative contributions, which sometimes allow determination of non-perturbative contributions that reproduce entire BPS spectra.

16:00-16:50

Yinan Wang (王一男 , Peking University)

Geometric Engineering of SCFTs from Canonical Threefold Singularities

I am going to review our series of works on understanding superconformal field theories with eight supercharges, arising from type II superstring/M-theory on canonical threefold singularities. We build connections between the Coulomb branch, Higgs branches, and VOAs on the physics side, and the resolution, deformation, and geometric invariants on the mathematics side.

Sep. 8, 2026

09:30-10:20

Yan Soibelman (Kansas State University) | Online

Generalized Riemann-Hilbert correspondence

In 2014 together with Maxim Kontsevich we started the program "Holomorphic Floer Theory". Important part of the program is the conjectural generalization of the Riemann-Hilbert correspondence. From our perspective it is a certain type of duality between Floer Theory of complex manifolds and deformation quantization of those manifolds. It unifies various known versions of the Riemann-Hilbert correspondence for differential, difference, q-difference and elliptic difference equations.

10:40-11:30

Shinobu Hosono （Gakushuin University)

Movable cones from mirror symmetry of Calabi-Yau manifolds

For a Calabi-Yau manifolds $\mathcal{X}$, the movable cone $\mathcal{M}ov\ (\mathcal{X})$ is defined as a collection of Kähler cones of birational models of $\mathcal{X}$ in terms of birational automorphisms. Under mirror symmetry, birational models of $\mathcal{X}$ appear as the corresponding LCSLs in a suitably compactified moduli space of the mirror family of $\mathcal{X}$. In this talk, I will show some examples where we see interesting relations between birational automorphisms of infinite order and certain connection matrices of period integrals of families. I will try to connect the subject to recent works on Coxeter symmetry in Gromov-Witten invariants, but this is a survey talk mostly based on the work "Movable vs monodromy nilpotent cones of Calabi-Yau manifolds" (SIGMA, 2018), with H. Takagi.

11:30-12:20

Charles Doran (University of Alberta)

Why do Feynman integrals know Calabi–Yau geometry?

Feynman integrals provide a rich source of Calabi–Yau geometry, but the geometric origin of these structures is often obscure. I will describe a simple point of view that begins with two-dimensional examples and leads naturally to moduli problems for vectors and polyhedra in three dimensions. I will discuss recent results for tetrahedral moduli and some new phenomena that appear for pentahedra.

14:00-14:50 **Ludmil Katzarkov（SCGP, Stony Brook University）**

MMP and Atoms

In this talk we will explain a new approach to MMP. Examples will be considered.

15:10-16:00 **Seung-Joo Lee (李承柱 , Yonsei University)**

Towards Explicit Bounds in Calabi-Yau Varieties: Dialogues between Physics and Geometry

Effective theories that admit a UV completion into quantum gravity are subject to a set of universal consistency constraints. Those constraints can sometimes lead to explicit, uniform bounds on concrete physical quantities of the effective theories. In the context of string compactifications, such physical bounds in turn translate into bounds on corresponding geometric quantities of Calabi-Yau varieties, and conversely. In this talk, focusing for concreteness on (real) six-dimensional F-theory vacua, or equivalently on genus-one fibered Calabi-Yau varieties of (complex) dimension three, we will illustrate such dialogues between physics and geometry through several examples of explicit bounds.

16:00-16:50 **Kai Xu (徐凯 , YMSC)**

Hodge number bound for elliptic Calabi-Yau

We present a bottom-up argument showing that the number of massless fields in six-dimensional quantum gravitational theories with eight supercharges is uniformly bounded, which provides a bound on the Hodge numbers of elliptic CY 3-folds: $h^{1,1}(CY3) \leq 491$, $h^{1,1}(Base) \leq 194$ that are saturated by special elliptic CY 3-folds. We will also discuss how to turn this into a mathematical proof by rigorously proving the anomaly cancellation condition for 6d F theory compactifications.

Sep. 9, 2026

09:30-10:20 **Mike Douglas (Harvard University) | Online**

Can we use numerics to prove the existence of an exact Calabi-Yau metric?

Yau's proof of the existence of Ricci-flat Kähler metrics is a tour de force of geometric analysis. More recently verified numerical methods have been used to make rigorous proofs of existence of solutions to Navier-Stokes and other nonlinear PDE. With Javier Gomez Serrano, Fabian Lehmann, Daniel Platt, Freid Tong and Yidi Qi we are trying to use these methods on Calabi-Yau metrics.

10:40-11:30 **Yang-Hui He (何楊輝 , LIMS & University of Oxford)**

Calabi-Yau manifolds: from geometry, to physics, to AI-driven Discovery

Calabi-Yau geometries have been at the fruitful intersection between pure mathematics and theoretical physics. Over the last 9 years, they have also provided a rich playground for AI-driven explorations in scientific discovery, inspiring approaches to problems that arise in diverse areas ranging from field theory, to algebraic geometry, to number theory. We give an overview of this progress, with a perspective on how AI will be transformative in the mathematical sciences in three intertwined directions: theorem-proving, conjecture formulation, and Large Language Models.

11:30-12:20 **Rak-Kyeong Seong (成洛京 , UNIST, Korea)**

Machine Learning Toric Calabi-Yau 3-folds and Brane Tilings

Machine learning methods have been used to study toric Calabi-Yau 3-folds and the associated 4d N=1 quiver gauge theories realized by brane tilings. These studies include the computation of Sasaki-Einstein volumes and the identification of distinct gauge theory phases represented by different brane tilings. This talk reviews these developments and presents a generative AI model that learns the correspondence between toric Calabi-Yau geometries and their associated gauge theories. It concludes with a brief outlook on how machine learning is going to transform the study of supersymmetric gauge theories arising from Calabi-Yau geometries in string theory and mathematical physics.

14:00-14:50 **Jonathan Heckman (University of Pennsylvania)**

Quiver Approach to Singularities in Calabi-Yau Spaces

Quiver gauge theories naturally arise from D-branes probing canonical singularities of a Calabi-Yau space. In this talk we discuss different invariants associated with these quivers which serve as a coarse classification scheme for such geometries. We illustrate by showing how such data encodes generalized symmetries of 5D SCFTs engineered via M-theory on a singular Calabi-Yau threefold, and also explain how AI / ML techniques can be used to verify whether different quivers characterize the same underlying geometry.

15:10-16:00 **Babak Haghighat（Tsinghua University & BIMSA）**

On the Screening of Charged Boundary States

The boundary conditions of field profiles specify important defining data of a quantum field theory (QFT). In many cases of interest, however, the QFT may not be geometric, thus complicating the interpretation of many properties of the theory. We present a coarse classification of boundary data for a QFT based on $\mathbb{B}_{\mathrm{QFT}}$, the boundary state screening group of a QFT. This is defined by first constructing the lattice of charges for boundary states and quotienting by all states which are compact / normalizable. When $\mathbb{B}$ is non-zero it provides a simple diagnostic for having a non-compact target space. In string backgrounds which geometrically engineer an interacting QFT, $\mathbb{B}$ is the worldsheet equivalent of the target space defect group. In massive QFTs $\mathbb{B}$ serves as the screening group for solitonic domain walls. In interface QFTs, it detects the existence of non-trivial modes localized on the wall. We illustrate these general considerations with a number of non-geometric 2D $\mathcal{N}=(2,2)$ Landau-Ginzburg models, as well as their natural lifts to 4D $\mathcal{N}=1$ Wess-Zumino models.

16:00-16:50

Juven C. Wang (王浚帆, London Institute for Mathematical Sciences)

Three Fermion Families, Pontryagin Class, Ultra Unification, and Topological Quantum Field Theory via Symmetry Extension

The talk is based on: arXiv:2605.26202, 2312.14928, 2501.00607, 2502.21319, 2512.25038, 2012.15860. I will discuss a topological approach to the Standard Model family puzzle: why quarks and leptons appear in three generations. The starting point is that 3 arises naturally in several topological constraints, from 4d to 2d dimensional reduction, including framing anomaly cancellation ($c\_=0$ mod 24), modular invariance, string and framed bordism, and (w_1)-(p_1) or Pontryagin-class structures. These ideas suggest that the family number may be constrained not by model-building dynamics, but by global and topological consistency conditions in quantum field theory. The main focus will be the mixed discrete baryon-plus/minus-lepton (B+L or B-L)-gauge-gravitational anomaly of the Standard Model without sterile right-handed neutrinos. This nonperturbative global anomaly is classified by five-dimensional spin bordism with finite cyclic symmetry. I will also relate the picture to Ultra Unification, topological leptogenesis (in contrast with Majorana or gravitational leptogenesis), and topological quantum dark matter, where sterile-neutrino sectors are replaced by gapped topological order with gapped anyonic excitations, and to the constructions of anomalous (3+1)-dimensional fermionic Topological Quantum Field Theories (TQFTs) via symmetry extension (in contrast with symmetry breaking or Anderson-Higgs mechanism).

Sep. 10, 2026

09:30-10:20

Mohammed Abouzaid (Stanford University)

Local Fukaya categories

On the algebro-geometric side of mirror symmetry, the category of coherent sheaves on a Calabi-Yau variety is assembled from local data: one understands an affine cover, and glues. The symplectic side has lacked such a tool, both because the Fukaya category has traditionally been defined as a global object, and because the Floer theory of a general Lagrangian is obstructed. I will discuss joint work in progress with Yoel Groman and Umut Varolgunes whose purpose is to construct a version of the Fukaya category that (i) allows all unobstructed Lagrangians, and (ii) depends in its construction on a choice of compact subset in the ambient symplectic manifold. This category admits the kind of local-to-global gluing that is familiar in algebraic geometry, and we intend to use it for applications to mirror symmetry.

10:40-11:30

Conan Nai Chung Leung (梁乃聪 , The Chinese University of Hong Kong)

Calabi-Yau in Mirror Symmetry

In this talk, I will explain the important roles that Calabi-Yau geometry plays in mirror symmetry and 3d mirror symmetry.

Sep. 11, 2026

09:30-10:20

Hiroshi Ooguri (大栗博司 , California Institute of Technology)

My Life with Calabi–Yau

Yau's proof of the Calabi conjecture established that every Kähler class on a compact Kähler manifold with trivial canonical bundle contains a unique Ricci-flat Kähler metric. Less than a decade later, Calabi–Yau manifolds became central to superstring theory. Beginning with the paper by Candelas, Horowitz, Strominger, and Witten, which changed the direction of my career, I will give a personal account of several paths opened by Calabi–Yau geometry. A recurring question will be how physical quantities depend on Calabi–Yau moduli. The story will pass through worldsheet conformal field theory, elliptic genera and Mathieu moonshine, topological strings and holomorphic anomalies, mirror symmetry, large-N duality and knot invariants, black-hole microstate counting, and the Swampland program. Taken together, these episodes offer one physicist's view of how Calabi–Yau manifolds have brought mathematics and physics together over the past half century.

10:40-11:30

Hee-Cheol Kim (金希澈 , Postech, Korea)

Reconstructing BPS String Cone in 6d $\mathcal{N}=(1,0)$ Supergravity

The tensor branch of six-dimensional $\mathcal{N}=(1,0)$ supergravity is characterized by a spectrum of BPS strings charged under the two-form gauge fields. Their charges span a cone in the tensor charge lattice, whose extremal rays are generated by primitive BPS string charges that become tensionless at the boundaries of the tensor moduli space. I will introduce a systematic procedure, based entirely on effective field theory data, to reconstruct the full set of primitive BPS string charges and thereby determine the complete BPS string cone of any 6d $\mathcal{N}=(1,0)$ supergravity theory. The key ingredients are the universal *H*-String, which allows us to isolate a fixed sector determined by classified LST blocks and gauge anomaly data from the remaining gauge-neutral E-string sector, and a BPS refinement of the Completeness Conjecture that ensures population of the relevant charge rays. I will further show that this reconstruction provides new constraints on the low-energy theory and can rule out EFTs that satisfy all currently known consistency conditions.

11:30-12:20

Xin Gao (高昕, Sichuan University)

From Orientifold Calabi–Yau Geometry to Machine-Learning Screening

Orientifold Calabi–Yau threefolds provide key geometric data for Type IIB compactifications, including O-plane structures, equivariant Hodge splittings, and tadpole constraints. I will describe the construction of orientifold Calabi–Yau hypersurfaces in toric varieties using proper divisor exchanges and multi-divisor reflections in MPCP-resolved geometries. I will then present a Multi-Head Attention classifier trained on resolved polytope vertex data to identify Calabi–Yau hypersurfaces admitting proper NID divisor-exchange involutions. The results show that such orientifold structure is statistically learnable and that machine learning can serve as an efficient screening tool before exact geometric verification.

14:00-14:50

Mauricio Romo (SIMIS)

Mirrors of singular Calabi-Yau double covers and gauge theory

I will present several properties and new findings on the mirror symmetry proposal of Hoso-no-Lee-Lian-Yau, that can be obtained from the dynamics of gauged linear sigma models in 2d.

15:10-16:00

Chin-Lung Wang (王金龍 , Taiwan University) | Online

Regularized analytic continuations of quantum cohomology

It is interesting to ask how quantum cohomology varies under geometric transitions of Calabi—Yau 3-folds. This is well known for type I transitions by direct analytic continuations. For type II and type III cases, new phenomena occur, and a non-trivial regularization map in the differential Galois group is introduced to resolve the analytic continuation problem. This is joint work with S.-Y. Lee and S.-S. Wang. If time permits, I will also report on related applications to the quantum invariance of non-smooth toric flops done by T.-C. Chen, J.-H. Chong, and H.-W. Lin.

16:00-16:50

Philip Candelas (University of Oxford)

TBA

Sep. 11, 2026

19:00-20:30

Hiroshi Ooguri (大栗博司 , California Institute of Technology)

The Science of "The Man from the 9 Dimensions"

"The Man from the 9 Dimensions" is a movie about superstring theory, the leading candidate for a unified theory of forces and matter, including gravity. It is based on the popular science books "引力是什么：支配宇宙万物的神秘之力" and "超弦理论：探究时间、空间及宇宙的本原" written by Professor Ooguri. He also served as an advisor to the movie to ensure its scientific accuracy. The movie has received numerous awards, including the 2016 Best Educational Production Award from the International Planetarium Society and the 2017 Best Full Feature Film and Best 3D Show at the Immersive Film Festival in Portugal. Professor Ooguri will explain the science behind the movie, which will take us from the microscopic world of elementary particles to the macroscopic world of the universe, and to its beginning - the Big Bang.

CALABI-YAU at 50
LEGACY AND FUTURE