

# **Symmetry 2025 – The 5th International Conference on Symmetry**

**16–19 May 2025 | Hangzhou, China**



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# Symmetry 2025 Program

Day 1 (16 May, Friday)			
15:00~17:00 Registration			
Day 2 (17 May, Saturday)			
8:00~9:00 Registration			
9:00	Networking		
	Zhonghao Hall		
9:30	Opening Ceremony		
9:45	Plenary talk 1		
10:25	Tea break		
10:50	Plenary talk 2		
11:30	Plenary talk 3		
12:10	Lunch		
	Qiuqing Hall	Chunxiao Hall	Xiayu Hall
13:30/14:00	Physics 1	Chemistry 1	Engineering 1
15:30	Tea break		
16:00	Physics 2	Chemistry 2	Engineering 2
17:30	Poster Session		
18:30	Banquet Dinner		
Day 3 (18 May, Sunday)			
8:00~8:30 Registration			
	Qiuqing Hall	Chunxiao Hall	Xiayu Hall
9:00	Physics 3	Mathematics 1	Engineering 3
10:30	Tea break		
11:00	Physics 4	Mathematics 2	Computer Science 1
12:30	Lunch		
13:30/14:00	Physics 5	Mathematics 3	Computer Science 2
15:30	Tea break		
16:00	Physics 6	Mathematics 4	Computer Science 3
17:30	Closing Remarks and Award Ceremony		
18:00	Buffet Dinner		
Day 4 (19 May, Monday)			
Dismiss and Free Activities			



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# Symmetry 2025 Detailed Program

Opening Ceremony and Plenary Talks		
Day 2 (17 May, Saturday) 9:30 - 12:10   Zhonghao Hall		
Time	Program	
9:30	Opening Ceremony	
9:45	Plenary talk 1	<b>Symmetry and group action</b> <i>Prof. Dr. Jiping Zhang</i> <i>Peking University, Beijing, China</i>
10:25	Tea break	
10:50	Plenary talk 2	<b>A QCD phase diagram by a holographic model</b> <i>Prof. Dr. Ronggen Cai</i> <i>Ningbo University, Ningbo, China</i>
11:30	Plenary talk 3	<b>The unified universe history from modified gravity</b> <i>Prof. Dr. Sergei D. Odintsov</i> <i>Institute of Space Sciences (IEEC-CSIC), Barcelona, Spain</i>

**Day 2 (17 May, Saturday) 13:30 - 17:30 | Qiuqing Hall**

**Physics Session 1**

**Session chair: Prof. Shin'ichi Nojiri**

13:30	Keynote	<b>Testing parity violations in the gravitational sector: birefringence in fermion-attenuated gravitational wave power spectrum</b> <i>Antonino Marciano (Fudan University, Shanghai, China)</i>
14:00	Invited	<b>Holographic Correlators of Boundary/Crosscap CFTs in Two Dimensions</b> <i>Song He (Ningbo University, Ningbo, China)</i>
14:20	Invited	<b>Grand Unified Theories: testability in particle physics and cosmology</b> <i>Ye-Ling Zhou (University of Chinese Academy of Sciences, Beijing, China)</i>
14:40	Oral	<b>New axion contribution to the two-photon decays of neutral pions</b> <i>Zhen-Yan Lu</i>
14:55	Oral	<b>Gross and subatomic matter/antimatter asymmetry: examination of scientific method from theory to experimental results</b> <i>Mark Pickrell</i>
15:10	Oral	<b>Asymptotically flat hairy black holes with (A)symmetric vacua</b> <i>Xiaoyan Chew</i>
15:25	Oral	<b>Construction of regular black holes: effective dynamics and quantum gravity implications</b> <i>Hongguang Liu</i>

**Physics Session 2**

**Session chair: Prof. Haitang Yang**

16:00	Invited	<b>Exploring parity and Lorentz symmetry violations in gravity with astrophysical observations</b> <i>Tao Zhu (Zhejiang University of Technology, Hangzhou, China)</i>
16:20	Oral	<b>Symmetry constraint on Berry phase in crystalline solid</b> <i>Jing Zhang</i>
16:35	Oral	<b>A treatment to gravitational perturbations and Lorentz-violating effects with Lagrangian analysis</b> <i>Chao Zhang</i>
16:50	Oral	<b>Finitely supertranslated Schwarzschild black hole and its perturbations</b> <i>Shaoqi Hou</i>
17:05	Oral	<b>The Recent Progress of DarkSHINE R&amp;D</b> <i>Rui Yuan</i>
17:20	Oral	<b>Exploring Modular Flavor Symmetries Across Various Modular Group Realizations</b> <i>Carlos Moises Arriaga Osante</i>

**Day 2 (17 May, Saturday) 13:30 - 17:30 | Chunxiao Hall**

### Chemistry Session 1

**Session chair: Prof. György Keglevic**

13:30	Invited	<b>A Geometric Berry Phase Angle Induced in Im-3m H3S at 200 GPa by Ultra-fast Laser Pulses</b> <i>Samantha Jenkins (Hunan Normal University, Changsha, China)</i>
13:50	Keynote	<b>Transition-Metal Catalyzed Desymmetrization to Access Different Organophosphorus</b> <i>Shangdong Yang (Lanzhou University, Lanzhou, China)</i>
14:20	Keynote	<b>Optical Resolution: the Behaviour of Related Structures and the Role of Solvents.</b> <i>Jozsef Schindler (Budapest University of Technology and Economics, Budapes, Hungary)</i>
14:50	Keynote	<b>Molecular engineering self-assembled monolayers for perovskite solar cells</b> <i>Weihua Tang (Xiamen University, Xiamen, China)</i>
15:20	Oral	<b>Chemical Equitable Partitions: A new Perspective on Molecular and Crystal Lattice Symmetries, and Its Implications for the Study of Structure–Property Relationships</b> <i>Vasilios Raptis</i>

### Chemistry Session 2

**Session chair: Prof. Weihua Tang**

16:00	Keynote	<b><math>\alpha</math>-Hydroxyphosphonates, <math>\alpha</math>-Hydroxyphosphine Oxides and their Derivatives</b> <i>György Keglevich (Budapest University of Technology and Economics, Budapes, Hungary)</i>
16:30	Keynote	<b>Selected Optically Active Organic Compounds Containing Stereo- and/or Nonsterogenic Heteroatoms: Historical Aspects and Recent Results</b> <i>Józef Drabowicz (University of Czestochowa, Czestochowa, Poland)</i>
17:00	Invited	<b>Anion pillared metal-organic frameworks for gas separation</b> <i>Yuanbin Zhang (Zhejiang Normal University, Jinhua, China)</i>
17:20	Oral	<b>Chiral Perovskites and Their Chirality-Induced Spin Selectivity</b> <i>Shuo Sun</i>

**Day 2 (17 May, Saturday) 14:00 - 17:30 | Xiayu Hall**

**Engineering Science Session 1**

**Session chair: Prof. Chong Wang**

14:00	Keynote	<b>Modeling of the Discrete Memristor and Its Applications: An Anticipation</b> <i>Shaobo He (Xiangtan University, Xiangtan, China)</i>
14:30	Keynote	<b>Photoresponse and synapse characteristics of Ga<sub>2</sub>O<sub>3</sub> based devices</b> <i>Longxing Su (Dongguan University of Technology, Dongguan, China)</i>
15:00	Oral	<b>Application of Symmetry and Fractional-order Mechanics of Bone in Physical Fractal Space</b> <i>Zhimo Jian</i>
15:15	Oral	<b>Physical Fractal and Fractal Operators Abstracted from Arterial Blood Flow</b> <i>Tianyi Zhou</i>

**Engineering Science Session 2**

**Session chair: Prof. Deming Lei**

16:00	Keynote	<b>Distribution regulation of chaos based on offset boosting</b> <i>Chunbiao Li (Nanjing University of Information Science &amp; Technology, Nanjing, China)</i>
16:30	Invited	<b>AI-Driven Sustainable Manufacturing: Innovations in Resource Recovery and Recycling</b> <i>Jie Li (Donghua University, Shanghai, China)</i>
16:50	Invited	<b>Introduction to Uncertainty Theory</b> <i>Waichon Lio (Beihang University China, Beijing, China)</i>
17:10	Oral	<b>The Key optoelectronic measurement technology for space gravitational wave detection</b> <i>Tao Yu</i>
17:25	Oral	<b>The Continued Fraction Structure in Physical Fractal Theory</b> <i>Ruiheng Jiang</i>

**Day 3 (18 May, Sunday) 9:00 - 12:30 | Qiujing Hall**

**Physics Session 3**

**Session chair: Prof. Shaowen Wei**

9:00	Invited	<b>Cosmological Non-Gaussianity and Neutrino Seesaw</b> <i>Chengcheng Han (Sun Yat-Sen University, Guangzhou, China)</i>
9:20	Invited	<b>Unitarity and causality constraints on effective field theories</b> <i>Anna Tokareva (University of Chinese Academy of Sciences, Beijing, China)</i>
9:40	Invited	<b>The post-Newtonian metric of a self-gravitating and collapsing thin spherical shell</b> <i>Wenbin Lin (University of South China, Hengyang, China)</i>
10:00	Invited	<b>Black Hole singularity resolution in infinite derivative gravity theories</b> <i>Alexey Koshelev (ShanghaiTech university, Shanghai, China)</i>
10:20	Oral	<b>Can the evolution of our universe be treated as an initial value problem?</b> <i>Martin Tamm</i>
10:35	Oral	<b>Polarization modes of gravitational waves in general Einstein-vector theory</b> <i>Xiao-Bin Lai</i>

**Physics Session 4**

**Session chair: Prof. Shin'ichi Nojiri**

11:00	Keynote	<b>Progress on the open string pair production in Type II superstrings</b> <i>Jianxin Lu (University of Science and Technology of China, Hefei, China)</i>
11:30	Invited	<b>Dark photon constraints from the APEX cavity haloscope experiment</b> <i>Nick Houston (Beijing University of Technology, Beijing, China)</i>
11:50	Invited	<b>Compact Star Physics in F(R) Gravity</b> <i>Taishi Katsuragawa (Central China Normal University, Wuhan, China)</i>
12:10	Oral	<b>Quasinormal Ringing of de Sitter Braneworlds</b> <i>Hai-Long Jia</i>

**Day 3 (18 May, Sunday) 13:30 - 17:30 | Qiuqing Hall**

**Physics Session 5**

**Session chair: Prof. Song He**

13:30	Invited	<b>Laboratory Constraints on Neutrinophilic Mediators Without Infrared Divergences</b> <i>Yongchao Zhang (Southeast University, Nanjing, China)</i>
13:50	Invited	<b>Chiral Gravitational Wave Background: Generation and Detection</b> <i>Yun-Long Zhang (National Astronomical Observatories, CAS, Beijing, China)</i>
14:10	Invited	<b>Black Hole Thermodynamics and Phase Transitions</b> <i>Shaowen Wei (Lanzhou University, Lanzhou, China)</i>
14:30	Oral	<b>Sixfold Discrete Symmetry of Fermion Fields as Explanation for Dark Matter</b> <i>Avraham Nofech</i>
14:45	Oral	<b>Recent Dark "Matter/Photon/Higgs" search results from ATLAS</b> <i>Ngoc Khanh VU</i>

**Physics Session 6**

**Session chair: Prof. Shaowen Wei**

16:00	Keynote	<b>Geometric Origins of Yang-Mills In Flat Spacetime from Heterotic String</b> <i>Hong Lv (Tianjin University, Tianjin, China)</i>
16:30	Keynote	<b>The correspondence of generalised entropic cosmology theory with <math>F(T)</math> and <math>F(Q)</math> modified gravity and gravitational waves</b> <i>Shin'ichi Nojiri (Nagoya University, Nagoya, Japan)</i>
17:00	Invited	<b>Next-to-leading order corrections to the conserved current three-point correlators in the large N expansion</b> <i>Zhijin Li (Southeast University, Nanjing, China)</i>
17:20	Oral	<b>Symmetry in Kottler-Møller and Rindler Coordinates with Coupled Parameters</b> <i>Nikolai Akintsov</i>



**Day 3 (18 May, Sunday) 9:00 - 12:30 | Chunxiao Hall**

**Mathematics Session 1**

**Session chair: Prof. Changzheng Qu**

9:00	Keynote	<b>Babylonian Algorithms and Ancient Chinese Algorithms and Their Modern Applications</b> <i>Jihuan He (Soochow University, Soochow, China)</i>
9:30	Invited	<b>KP theory and infinite dimensional Lie algebras</b> <i>Jipeng Cheng (China University of Mining and Technology, Xuzhou, China)</i>
9:50	Invited	<b>A Novel Model of Supply and Demand of Energy for Solar Farms in China</b> <i>Samad Noeiaghdam (Henan Academy of Sciences, Zhengzhou, China)</i>
10:10	Oral	<b>Conjecture O and the Gamma Conjectures: A Unified Framework in Quantum Cohomology and Geometric Applications</b> <i>Xiaobin Li</i>
10:25	Oral	<b>Symmetry and exact solutions of the (2+1)-dimensional generalized Burgers–Fisher equation</b> <i>Yanting Ren</i>

**Mathematics Session 2**

**Session chair: Prof. Qingwen Wang**

11:00	Keynote	<b>Coseparable Nonnegative Tensor Factorization With T-CUR Decomposition</b> <i>Yimin Wei (Fudan University, Shanghai, China)</i>
11:30	Invited	<b>Dual-Valued Functions of Dual Matrices with Applications in Causal Emergence</b> <i>Weiyang Ding (Fudan University, Shanghai, China)</i>
11:50	Oral	<b>A Shear Flow Model for Compressible Micropolar Real Fluids with Heat Conduction and Symmetry-Driven Reduction</b> <i>Ivan Dražić</i>
12:05	Oral	<b>Mathematical elements in trees, forests, and nature</b> <i>Iwao Uehara</i>

**Day 3 (18 May, Sunday) 14:00 - 17:30 | Chunxiao Hall**

### Mathematics Session 3

**Session chairs: Prof. Shoufeng Shen and Prof. Ying Shi**

14:00	Keynote	<b>Nonlocal symmetries of integrable systems</b> <i>Senyue Lou(Ningbo University, Ningbo, China)</i>
14:30	Invited	<b>Recent advances in Aharonov-Bohm extended electrodynamics</b> <i>Giovanni Modanese (Free University of Bozen-Bolzano, Bolzano, Italy)</i>
14:50	Oral	<b>The 3D Flow of a Compressible Micropolar Real Gas with Spherical Symmetry: The Global Existence of the Solution</b> <i>Angela Bašić-Šiško</i>
15:05	Oral	<b>Algebraic Nexus of Fibonacci Forms and Two-Simplex Topology in Multicellular Morphogenesis</b> <i>Elizabeth Lamb</i>
15:20	Oral	<b>Generalized bigraded Toda hierarchy</b> <i>Jinbiao Wang</i>

### Mathematics Session 4

**Session chairs: Prof. Qingwen Wang, Prof. Shoufeng Shen, Prof. Ying Shi**

16:00	Keynote	<b>Exact solutions of nonlinear PDEs by symmetry multi-reduction</b> <i>Stephen Anco (Brock University, St. Catharines, Canada)</i>
16:30	Keynote	<b>Reduced biquaternion tensors and their applications</b> <i>Yang Zhang (University of Manitoba, Winnipeg, Canada)</i>
17:00	Oral	<b>Equivariant formality of homogeneous spaces</b> <i>Chi-Kwong Fok</i>
17:15	Oral	<b>Fifth-order nonlinear evolution equations of soliton type: old and new results</b> <i>Sandra Carillo</i>
17:30	Oral	<b>Response control and bifurcation analysis of a generalized and fractional Rayleigh-Duffing oscillator under recycling noises</b> <i>Yajie Li</i>

**Day 3 (18 May, Sunday) 9:00 - 12:30 | Xiayu Hall**

**Engineering Science Session 3**

**Session chairs: Prof. Chong Wang and Prof. Deming Lei**

9:00	Keynote	<b>Fractal operators with fractional orders in fractal spaces abstracted form biological systems</b> <i>Yajun Yin (Tsinghua University, Beijing, China)</i>
9:30	Invited	<b>A shuffled frog leaping algorithm with Q learning for distributed hybrid flow shop scheduling problem with missing operations</b> <i>Jingcao Cai (Anhui Polytechnic University, Wuhu, China)</i>
9:50	Oral	<b>Novel non-probabilistic uncertainty-based fault diagnosis method considering sample distribution</b> <i>Qiang Xin</i>
10:05	Oral	<b>A study on symmetric truncated icosahedral tensegrity</b> <i>Jingyao Zhang</i>

**Computer Science Session 1**

**Session chairs: Prof. Kuo-Hui Yeh and Prof. Hu Xiong**

11:00	Keynote	<b>A Survey of Expressive Attribute-Based Encryption Scheme With Provable Security</b> <i>Hu Xiong (University of Electronic Science and Technology of China, Chengdu, China)</i>
11:30	Keynote	<b>RESEARCHES ON THE DEFENSES AND OUT-OF-DISTRIBUTION DETECTION IN TRUSTWORTHY DEEP LEARNING</b> <i>Jie Yang (Shanghai Jiaotong University, Shanghai, China)</i>
12:00	Oral	<b>ADTSA: an Adaptive Dual-subpopulation based Tree Seed Algorithm for Local Optima Avoidance and Fast Convergence</b> <i>Hao Li</i>
12:15	Oral	<b>AMTSA: Adaptive and Migration-enhanced Tree Seed Algorithm for Complex Optimization Problems</b> <i>Chenxi Li</i>

**Day 3 (18 May, Sunday) 14:00 - 17:30 | Xiayu Hall**

**Computer Science Session 2**

**Session chairs: Prof. Kuo-Hui Yeh and Prof. Hu Xiong**

14:00	Keynote	<b>ZEROS FOR DATA SCIENCE</b> <i>Yanxi Liu (Penn State University, State College, USA)</i>
14:30	Invited	<b>Symmetry Features in Space Target Radar Detection and Imaging</b> <i>Junling Wang (Beijing Institute of Technology, Beijing, China)</i>
14:50	Oral	<b>Review on Fractal Analysis in Tsunami Modeling by symmetric analysis: A New Perspective for Predicting Tsunami Behavior</b> <i>Yan Wang</i>
15:05	Oral	<b>KMBCA: A K-Means clustering-based Besiege and Conquer Algorithm with adaptive and multi-strategy enhancements</b> <i>Aobo Zhang</i>

**Computer Science Session 3**

**Session chair: Prof. Kuo-Hui Yeh**

16:00	Keynote	<b>Provably Secure Searchable Symmetric Encryptions: Definition, Construction, Attacks and Defenses</b> <i>Jianting Ning (Wuhan University, Wuhan, China)</i>
16:30	Keynote	<b>Security Risk Assessment for Industrial Automation and Control Systems</b> <i>Kuo-Hui Yeh (National Yang Ming Chiao Tung University, Taiwan, China)</i>
17:00	Oral	<b>Learn From Human Eyes: Zero-Shot Recurring Pattern Detection on a Multi-Perception Benchmark</b> <i>Shimian Zhang</i>