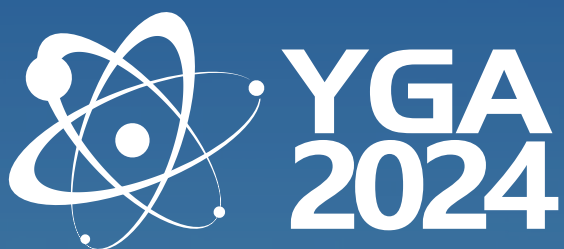


2024 Joint Annual Conference of Physical Societies in
Guangdong-Hong Kong-Macao Greater Bay Area
粵港澳大灣區物理學會2024聯合年會

30 July - 1 August, 2024
Macao SAR, China

Program Book





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Guangdong-Hong Kong-Macao Greater Bay Area
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**30 July - 1 August, 2024
Macao SAR, China**



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Biao Wang, School of Physics, Sun Yat-sen University

Bei Zeng, Department of Physics, The Hong Kong University of Science and Technology

Organizing Committee

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▲
Conference Program
Latest Version

Program Overview



Day 1 July 29th, Monday Venus: Foyer, 3F, Studio City, Macau

14:00-20:00 Conference Registration

Day 2 July 30th, Tuesday Venus: Conference Room, 3F, Studio City, Macau

09:00-09:25 Opening Ceremony

09:25-10:30 Plenary Session (I)

10:30-11:00 Coffee Break & Poster Session

11:00-12:20 Plenary Session (I)

12:30-14:00 Lunch Break

14:00-15:30 Parallel Sessions

15:30-16:00 Coffee Break & Poster Session

16:00-18:00 Parallel Sessions

18:30-20:30 Banquet

Day 3 July 31st, Wednesday Venus: Conference Room, 3F, Studio City, Macau

09:00-10:30 Parallel Sessions

10:30-11:00 Coffee Break & Poster Session

11:00-12:30 Parallel Sessions

12:30-14:00 Lunch Break

14:00-15:20 Plenary Session (II)

15:20-15:50 Coffee Break & Poster Session

15:50-17:50 Plenary Session (II)

17:50-18:10 Closing Ceremony & Post Award Ceremony

July 30th, Tuesday, Ballroom II + III

Opening Ceremony and Group Photo

09:00-09:05	Opening Remark Prof. Yonghua SONG, Rector, University of Macau
09:05-09:10	Welcome Remark Prof. Handong SUN, Representative of Physical Society of Macao; Associate Director of IAPME & Distinguished Professor, University of Macau
09:10-09:15	Welcome Remark Prof. Biao WANG, Chair and Representative of Guangdong Physics Society, Sun Yat-sen University,
09:15-09:20	Welcome Remark Prof. Xin WANG, Representative of Physical Society of Hong Kong, City University of Hong Kong
09:20-09:25	Kick-off Ceremony and Group photo

Plenary Sessions (I) Chair: Prof. Handong SUN, University of Macau

09:25-09:50	Physics Research and Education at University of Macau Prof. Wei GE, Vice Rector, University of Macau
09:50-10:30	X-Mechanics: An Endless Frontier Prof. Wei YANG, Academician, Chinese Academy of Sciences, Zhejiang University
10:30-11:00	Coffee Break
11:00-11:40	Exploration of New 2D Materials and Their New Properties Prof. Huiming CHENG, Academician, Chinese Academy of Sciences, Shenzhen University of Advanced Technology
11:40-12:20	Exploring the Milky Way with LAMOST Survey Prof. Gang ZHAO, Academician, Chinese Academy of Sciences, National Astronomical Observatory of the Chinese Academy of Sciences
12:20-12:30	Summary
12:30-14:00	Lunch break

July 31th, Wednesday, Ballroom II + III

Plenary Sessions (II) Chair: Prof. Daoxin YAO, Sun Yat-sen University

14:00-14:40 **Photonic Axion Insulator**
Prof. Baile ZHANG, Nanyang Technological University

14:40-15:20 **Probing the Carrier Dynamics in Metal-halide Perovskites for Light Emission Applications**
Prof. Guichuan XING, University of Macau

15:20-15:50 Coffee Break & Poster Session

Plenary Sessions (II) Chair: Prof. Xin WANG, City University of Hong Kong

15:50-16:30 **Optical Interferometry in the Quantum Age**
Prof. Zhe-Yu OU, The City University of Hong Kong

16:30-17:10 **Twisted Two-Dimensional Materials**
Prof. Hyoung Joon CHOI, Yonsei University

17:10-17:50 **Surface Reconstruction / Phase Transition in Catalysis**
Prof. Hui PAN, University of Macau

17:50-18:10 Closing Ceremony & Poster Award Ceremony

Wei GE



Vice Rector, University of Macau, Macao SAR, China

Abstract: Founded in 1981, the University of Macau (UM) is an international public comprehensive university in Macao, with a multicultural campus and a system of whole-person education underpinned by faculties and residential colleges in an international education setup. After 43 years development, UM now ranked No. 193 in the Times Higher Education (THE) World University Rankings and No. 245 in the Quacquarelli Symonds (QS) World University Rankings. In 2014, UM relocated from its original campus in Taipa to a new one on Hengqin Island, reaching a significant milestone. Later, the Institute of Applied Physics and Materials Engineering (IAPME) was founded, marking the beginning of physics research and education at UM. IAPME at the UM offers a well-balanced fundamental and applied research, which is a unique entity in bridging the gap between pure science and engineering. In this talk, I will first introduce the history of UM and IAPME, then focus on the development, achievement of both physics research and education in IAPME, UM.

Bio: Prof. Wei Ge is currently a Vice Rector (Research) and Chair Professor at the Faculty of Health Sciences, University of Macau. Prof. Ge received his BSc from Nanjing University (1982), MSc from the Institute of Hydrobiology, Chinese Academy of Sciences (1985), and PhD from University of Alberta, Canada (1992). After obtaining his PhD, he received a postdoctoral scholarship from the Natural Sciences and Engineering Research Council of Canada to work at the National Institute for Basic Biology, Japan (1993-1995). In 1995, Prof. Ge joined The Chinese University of Hong Kong where he established his teaching and research career. He was a professor at the School of Life Sciences at CUHK until 2013 when he moved to University of Macau (UM). He helped establish the Faculty of Health Sciences as an Interim Dean. Prof. Ge has published about 110 papers and his research focuses on reproduction, development and aging using zebrafish as the model, including: (1) endocrine regulation of reproduction by the reproductive and growth axes; (2) intra-follicular paracrine/autocrine communication network in the ovary; (3) impacts of environmental endocrine-disrupting chemicals (EDCs) on reproduction and public health; and (4) zebrafish as a model for aging, human diseases and drug discovery. Prof. Ge has served as the council member for the International Federation of Comparative Endocrinological Societies (IFCES) (2009-2013), the Asia and Oceania Society for Comparative Endocrinology (AOSEC) (2012-), the Chinese Society of Comparative Endocrinology (2013-), and the International Society for Fish Endocrinology (ISFE) (2014-). He has served as Associate Editor or editorial board member for several international journals, including *Frontier in Endocrinology*, *General and Comparative Endocrinology*, and *Marine and Freshwater Behaviour and Physiology*.

Plenary Speakers



Wei YANG



Zhejiang University, Hangzhou, China

Abstract: In contrast to the conventional wisdom that mechanics is a relatively mature subject, the new manifestation of mechanics in an extended or crossed form is unfolding. Mechanics is now powering all subjects, from physical sciences, life sciences to social sciences. We name this new phase for the development of mechanics X-Mechanics. The present talk outlines the contents of X-Mechanics from four aspects: cross media, cross scales, cross compliances, and cross cyber/physical spaces. X-mechanics constitutes an endless frontier of science and technology. Examples related to bio-mechanics will be discussed, including bio-compatible hydrogels and their derivatives; cross-scale simulation and experimentation, flexible electronics and soft electro-mechanical fishes. From another aspect, solids in nano-scales may exhibit extreme strength and elasticity. The nano-scaled specimen can be made by diamond, ice or high entropy alloy. For the case of single crystal natural diamond, the nano-pillars that deplete interior defects and with superior surface finishing can be produced, and the nano-pillar could withstand bending up to 13.4% elastic stretch at the surface. Translated with a non-linear elastic relation facilitated by ab initio calculation, we are able to achieve an extraordinary tensile strength of 125 GPa, quite close to the theoretical strength of diamond. We are able to drive a very clean cleavage crack through the diamond nano-pillar and that gives rise to the blade of a sharp "Atomic Knife" of diamond, with an edge radius of only 1nm. The atomic wedge can be used as a sweeper to cut metals (such as gold). For ice fibres of sub-micron diameter, an extreme elastic strain of 10.9% is acquired, far exceeding the previous record of 0.3%. For high entropy alloy in nano-scale, an extreme elastic strain of about 10% can be achieved. Tension-induced melting for crystalline metals, as envisaged by Lindemann, is realized. These results indicate ample room for upgrading the mechanical behaviour of solids in nano-scales.

Bio: Prof. Wei Yang was graduated from Northwestern Polytechnic University in 1976. He received a M.S. in Engineering from Tsinghua University in 1981 and a Ph.D. in Engineering from Brown University in 1985. Prof. Yang started his career at the Department of Engineering Mechanics of Tsinghua University, and became a professor in 1989. He chaired the Academic Committee of Tsinghua University (2004-2006). From 2004 to 2006, he served as the Director-General of the Academics Degrees Committee of the State Council of China. From 2006 to 2013, he took the position of the President of Zhejiang University. Since 2013, he has been appointed as the President of the National Natural Science Foundation of China (NSFC). Prof. Yang made contributions in Fracture, Micromechanics and X-Mechanics. Prof. Yang was elected as a member of the Chinese Academy of Sciences (CAS) in 2003. He is also a member of TWAS since 2004, a foreign member of NAE since 2017. Prof. Yang's honors include the Calvin Rice Lecture Award, ASME, 2012; Eric Reissner Medal, ISES, 2011 and W. T. Koiter Medal, ASME, 2015. He currently chairs the review for Science & Technology Award of Macau.

Hui-Ming CHENG



¹Institute of Technology for Carbon Neutrality, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

²Faculty of Materials Science and Energy Engineering, Shenzhen University of Advanced Technology, Shenzhen, China

³Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

Abstract: Identification of two-dimensional (2D) materials in the monolayer limit has led to discoveries of new phenomena and unusual properties. In this lecture, I'll first report the growth of large-area high-quality 2D ultrathin Mo₂C crystals by CVD [1], which show 2D characteristics of superconducting transitions that are consistent with Berezinskii-Kosterlitz-Thouless behaviour and show strong dependence of the superconductivity on the crystal thickness. Furthermore, when we introduce elemental silicon during CVD growth of nonlayered molybdenum nitride, we have grown centimeter-scale monolayer films of MoSi₂N₄ which does not exist in nature and exhibits semiconducting behavior, high strength, and excellent ambient stability [2]. On the other hand, we have found some interesting properties from well-known 2D materials such as h-BN. For example, a class of membranes assembled with 2D transition-metal phosphorus trichalcogenide nanosheets give exceptionally high ion conductivity and superhigh lithium ion conductivity [3]. We even demonstrate an anomalously large magneto-birefringence effect in transparent suspension of magnetic 2D crystals [4], with orders of magnitude larger than that in previously known transparent materials. Moreover, based on this phenomenon, we develop a stable and birefringence-tunable deep-ultraviolet modulator from 2D hexagonal boron nitride which gives rise to a ultra-high specific magneto-optical Cotton-Mouton coefficient, about five orders of magnitude higher than other potential deep-ultraviolet-transparent media [5]. Recently, we found that strong bulk van der Waals materials can be densified from their nanosheets at near room temperatures with mediation of water [6]. These findings indicate a great promise of 2D materials.

Plenary Speakers



- [1] C. Xu et al., Nature Materials 14, p. 1135 (2015).
- [2] Y. L. Hong et al, Science 369, p. 670 (2020).
- [3] X. T. Qian et al, Science 370, p. 596 (2020).
- [4] B. F. Ding et al, Nature Communications 11 (1), p. 3725 (2020).
- [5] H. Xu et al, Nature Nanotechnology 17, p.1091 (2022).
- [6] J. Y. Zhu et al, Nature Materials doi.org/10.1038/s41563-024-01840-0 (2024).

Bio: Prof. Hui-Ming Cheng is the chair professor and honorary dean of Faculty of Materials Science and Energy Engineering, and director of Institute of Technology for Carbon Neutrality, Shenzhen Institute of Advanced Technology, CAS. Prof. Cheng is graduated from Hunan University, China in 1984 and received his Ph. D in 1992 from Institute of Metal Research, Chinese Academy of Sciences. He is now the founding director of the Institute of Technology for Carbon Neutrality, Shenzhen Institute of Advanced Technology, CAS since 2021 and the director of the Advanced Carbon Research Division of Shenyang National Laboratory for Materials Science, IMR CAS since 2001. He has worked at Kyushu Research Center of AIST and Nagasaki University, Japan from 1990 to 1993, and MIT, USA from 1997 to 1998. He is a member of Chinese Academy of Sciences and a fellow of TWAS. His research activities mainly focus on energy materials and devices, carbon nanotubes, graphene and other 2D materials. He has published over 950 papers with an h-index of 166, and is a Highly Cited Researcher in three fields of materials science, chemistry, and environment and ecology. He has given over 230 plenary/keynote/invited lectures at various conferences, and won 4 State Natural Science Award of China (2nd class), Charles E. Pettinos Award from American Carbon Society, Felcht Award from SGL, Germany, and ACS Nano Lecture Award from ACS. He is the founding Editor-in-Chief of Energy Storage Materials since 2015.

Gang ZHAO



National Astronomical Observatories, Chinese Academy of Sciences, China

Abstract: As our host galaxy, the structure, formation and evolution of the Milky Way have always been cutting-edge fields in contemporary astrophysical research. With the continuous implementation of high-precision photometric surveys in space and large-scale spectroscopic surveys on the ground, rare opportunities have been provided for deep studies of the Milky Way. This talk will focus on introducing the new picture of the Milky Way presented based on the LAMOST survey. Starting from the basic structure and formation process of the Milky Way, it reveals some of our latest understandings of the Milky Way, as well as the breakthrough achievements made in the study of the Milky Way with LAMOST spectroscopic survey.

Bio: Prof. Gang Zhao, academician of the Chinese Academy of Sciences (CAS), professor of the National Astronomical Observatories, CAS, chairman of LAMOST Science Committee. He has successively received the China Youth Scientist Award, the Ho Leung Ho Lee Prize for Scientific and Technological Progress, the Hong Kong Qishi Outstanding Science and Technology Achievement Group Award, etc. He is also the PI of the Basic Science Center project of the National Natural Science Foundation of China and the Chief Scientist of the National Key R&D program "Research on the Milky Way Based on LAMOST Survey". His research interests are stellar abundances, NLTE analysis of late-type stars, searching and analysis of exoplanets, formation and evolution of the Milky Way, and laboratory astrophysics. These researches have been selected into China's annual top 10 astronomical advances for several times. The study on exploring the chemical evolution of the Milky Way with stellar abundances has won the second prize of the National Natural Science Award of China.

Plenary Speakers



Baile ZHANG



Nanyang Technological University, Singapore

Abstract: Axions are hypothetical particles originally proposed to solve the strong charge-parity (CP) problem in the Standard Model and later predicted to constitute the elusive dark matter. While still not observed as elementary particles, axions can arise as quasiparticles in three-dimensional topological crystals known as axion insulators. The bulk of the crystal is characterized by a quantized axion field angle $\theta = \pi$, which induces half-quantized Chern numbers across all surfaces. Here, we will discuss how to realize a three-dimensional axion insulator in photonic crystals. This line of research follows our previous works on three-dimensional photonic topological insulators with and without magnetic materials.

Bio: Prof. Baile Zhang is a professor of physics in the School of Physical and Mathematical Sciences at Nanyang Technological University, Singapore. He received his Ph.D. in electrical engineering from the Massachusetts Institute of Technology (MIT) in 2009. After a two-year postdoc period in the Singapore-MIT Alliance for Research and Technology Centre, he joined Nanyang Technological University in 2011 as an assistant professor. He became an associate professor in 2017 and full professor in 2021. His research interests include waves in complex media, metamaterials, photonic and phononic crystals, and acoustics.

Guichuan XING

Institute of Applied Physics and Materials Engineering,
University of Macau, Macao SAR, China



Abstract: The development of high-efficiency, stable and low-cost luminescent materials and devices is one of the most effective ways to achieve efficient use of energy, and is an important guarantee for our country's transition to a low-carbon economy. Metal-halide perovskites possess the advantages of both inorganic and organic materials, and have great potential for low-cost, large-area, flexible display and lighting applications. The core of the work of perovskite light-emitting devices is the carrier dynamics of the functional layer under the driving of electric/optical field. Therefore, the detection, understanding and manipulation the carrier dynamics in perovskite by tailoring the materials' dimensionality and size are the key scientific issues in this field. In this report, we'll introduce our recent discoveries on the excellent luminescent properties of metal-halide perovskites, the detection and regulation of carrier dynamics, research works on performance optimization of light-emitting devices and development of new luminescent applications.

Bio: Prof. Guichuan Xing is a professor in the Institute of Applied Physics and Materials Engineering at the University of Macau (UM). He received his Ph.D. in Physics from National University of Singapore in 2011 and then worked as research fellow in the Division of Physics & Applied Physics at Nanyang Technological University (Singapore) from 2009 to 2016. He joined UM in 2016. His research interests lie in ultrafast laser spectroscopy, nano optoelectronics, perovskite for light harvesting and light emission. He has published more than 300 peer-reviewed journal papers with citation over 30,000 times.

Plenary Speakers



Zhe-Yu OU

Department of Physics, City University of Hong Kong,
Hong Kong SAR, China



Abstract: Interferometry has been widely used in sensing application for precision measurement of a variety of physical quantities. However, the hardware structure and the measurement technique have not changed ever since its invention about one hundred years ago, even though quantum states are employed to reduce the intrinsic quantum noise in the interferometers. This has limited the applicable range of the traditional interferometric technique. For example, the interference paths must be balanced to within the coherence time of the light sources. In this presentation, we will introduce some new quantum approaches to interferometry. Among them is the approach by hardware changes. We will review a number of quantum advantages over traditional methods. Another one is the adoption of quantum measurement technique. This can break the limitation of finite coherence time in traditional interferometry and broaden the applicable range of interferometric techniques. The latter approach has potential applications in long-baseline high resolution astronomy and LIDAR technique. In addition to practical applications, when the method is applied to single-photon state as input, this unconventional phenomenon has fundamental implication on the complementarity principle of quantum interference.

Bio: Professor Zhe-Yu Ou obtained his BS in 1984 from Peking University and his Ph.D. in 1990 from University of Rochester. He is now a chair professor in City University of Hong Kong. Professor Ou is an expert in quantum optics, especially in quantum interference, for which he is famous for the Hong-Ou-Mandel interferometer. His current research focuses on quantum metrology, quantum sensing, quantum state engineering, and the fundamental quantum interference effects. Professor Ou is a fellow of American Physical Society and of Optica (formerly Optical Society of America) and now serves as an Associate Editor of OPTICA Quantum.

Hyoung Joon CHOI



Department of Physics, Yonsei University, Seoul, Korea

Abstract: Twisted layers of two-dimensional materials such as graphene and transition-metal dichalcogenides have emerged as a new platform of novel electronic structures. Since they have large moiré supercells typically, it becomes a challenge to perform accurate theoretical calculations of their electronic structures. Here, we present atomistic approaches to atomic and phononic structures of twisted graphene layers [1-3] and twisted transition-metal dichalcogenide layers [4-5], and discuss their atomic, electronic, and phononic properties [1-5].

[1] Y. W. Choi and H. J. Choi, Phys. Rev. B 98, 241412 (2018).

[2] Y. W. Choi and H. J. Choi, Phys. Rev. B 100, 201402 (2019).

[3] Y. W. Choi and H. J. Choi, Phys. Rev. Lett. 127, 167001 (2021).

[4] S. Y. Lim, H.-g. Kim, Y. W. Choi, T. Taniguchi, K. Watanabe, H. J. Choi, and H. Cheong, ACS Nano 17, 13938 (2023).

[5] S. Oh, H.-g. Kim, J. Kim, H. Jeong, H. J. Choi, and H. Cheong, 2D Materials 11, 025004 (2024).

Bio: Prof. Hyoung Joon Choi is professor of Department of Physics, Yonsei University, Seoul, Korea. Prof. Hyoung Joon Choi received B. S. in Physics from Seoul National University in 1992, M. S. in Physics from Seoul National University in 1994, and Ph. D. in Physics from Seoul National University in 2000. He performed his postdoctoral research at Department of Physics, University of California, Berkeley as a Miller Research Fellow (2000-2003). He joined the faculty of School of Computational Sciences, Korea Institute for Advanced Study in 2003, and joined the faculty of Department of Physics, Yonsei University in 2005. He is President of Association of Asia Pacific Physical Societies (AAPPS) from 2023 to 2025. His research areas are computational studies of physical properties of solids and nanostructures, including exotic electronic structures, electronic transport, superconductivity, and magnetism.

Hui PAN



**Institute of Applied Physics and Materials Engineering,
University of Macau, Macao SAR, China**

Abstract: Catalysis is ubiquitous in chemical industry of all kinds, where the catalysts play critical roles for the chemical reaction rate and product selectivity. In this talk, we are going to explore the roles of surface reconstruction and phase transition in the chemical reactions with a focus on the electrolysis of water, CO₂ reduction and nitrate reduction. For the electrolysis of water, we found that crystalline oxide transferred to amorphous in the hydrogen evolution reaction (HER), and metal hydroxides/oxyhydroxides were formed on the surface of catalyst in the oxygen evolution reaction (OER). For the nitrate reduction to ammonia, we noticed that the surface reconstruction strongly depended on the working condition and pre-catalyst. For the CO₂ reduction, the surface reconstruction is greatly affected by the electrolyte, and may be beneficial or harmful to the reaction. We conclude that the pre-catalysts need to be well designed for achieving the high performance. The theoretical study is necessary to reveal the reconstruction process.

Bio: Prof. Hui Pan is a professor in the Institute of Applied Physics and Materials Engineering at the University of Macau. He got his PhD degree in Physics from the National University of Singapore in 2006. From 2006 to 2013, he worked at National University of Singapore as a Research Fellow, Oak Ridge National Laboratory (USA) as a Postdoctoral Fellow, and Institute of High Performance Computing (Singapore) as a Senior Scientist, respectively. He joined the University of Macau as an assistant professor in 2013. In his research, a combined computational and experimental method is used to design and fabricate novel nanomaterials for applications in energy conversion and storage (such as electro-/photo-catalysis, water splitting, and NO_x/CO₂ reduction), electronic devices, and spintronics. He has published more than 280 papers in international peer-reviewed journals. The total citation is ~ 17000. Additionally, he is the author of 5 book chapters and the inventor of 4 USA and 12 China patents. His present h-index is 69.

S1: Astrophysics and Astronomy

July 30th, Tuesday, Salon IV

Session Chair: Prof. Junhui Fan, Guangzhou University

14:00-14:30 (Keynote talk)	Beaming effect and relativistic jet characteristic in Fermi-Era-Blazars Prof. Zhiyuan Pei, Guangzhou University
14:30-14:50 (Invited talk)	Robustness of the galactic center excess morphology against masking Prof. Yiming Zhong, City University of Hong Kong
14:50-15:10 (Invited talk)	A newborn radio Jet in a NLSy1 galaxy Dr. Liming Dou, Guangzhou University
15:10-15:30 (Invited talk)	Simulating HII regions with comprehensive non-equilibrium thermo-chemistry and radiation hydrodynamics Prof. Tsang Keung Chan, Chinese University of Hong Kong
15:30-16:00	Coffee Break & Poster Session

Session Chair: Prof. Junhui Fan, Guangzhou University

16:00-16:20 (Invited talk)	Fate of the remnant in partial tidal disruption event: repeating and non-repeating Dr. Jinhong Chen, University of Hong Kong
16:20-16:40 (Invited talk)	Quantum aspects of inflationary cosmology Prof. Jun'ichi Yokoyama, The University of Tokyo
16:40-17:00 (Invited talk)	Recent observational results of pulsar wind nebulae Prof. Stephen Ng, University of Hong Kong
17:00-17:20 (Invited talk)	The stellar initial mass function in MASSIVE early-type Galaxies Prof. Meng Gu, University of Hong Kong
17:20-17:40 (Invited talk)	Optical observation of gamma-ray bursts and it's relevant transients with GXU ground based optical telescopes Prof. Xianggao Wang, Guangxi University
17:40-17:55 (Oral talk)	The X-ray properties of AGNs with extreme variability Prof. Yanli Ai, Shenzhen Technology University
17:55-18:10 (Oral talk)	Exploiting gravitational recoils of black-hole mergers in Active Galactic Nuclei Mr. Samson Leong, Chinese University of Hong Kong
18:10-18:25 (Oral talk)	Casimir effect of a wedge and its gravity dual Dr. Rong-Xin Miao, Sun Yat-sen University

July 31th, Wednesday, Ballroom II + III

Session Chair: Prof. Meng Gu, University of Hong Kong

09:00-09:20 (Invited talk)	Classification and variability property of blazars Dr. Wen-Xin Yang, Guangzhou University
09:20-09:40 (Invited talk)	Bridging gravitational memory with cosmological symmetries Prof. Sam Wong, City University of Hong Kong
09:40-10:00 (Invited talk)	Optical monitoring and variability analyses of three blazars Prof. Yu-Hai Yuan, Guangzhou University
10:00-10:20 (Invited talk)	Gravitational-wave lensing Prof. Otto Hannuksela, Chinese University of Hong Kong
10:20-10:35 (Oral talk)	Behaviour of self-interacting ultralight bosonic dark matter in the vicinity of a black hole Mr. Jianqiao Deng, Chinese University of Hong Kong
10:35-11:00	Coffee Break & Poster Session

Session Chair: Prof. Meng Gu, University of Hong Kong

11:00-11:20 (Invited talk)	Dark matter: Heavy or light? Prof. Jeremy Lim, University of Hong Kong
11:20-11:40 (Invited talk)	Solar Gamma Rays as a new way to study the Sun Prof. Kenny Chun Yu Ng, Chinese University of Hong Kong
11:40-12:00 (Invited talk)	The local decay of MHD turbulence in a molecular cloud Mr. Shibo Yuan, The Chinese University of Hong Kong
12:00-12:15 (Oral talk)	The behavior and dynamics of PSR B1259-63/LS 2883 Ms. Jiawei Rao, University of Hong Kong
12:15-12:30 (Oral talk)	Novel topological black holes from thermodynamics and deforming horizons Dr. Jinbo Yang, Guangzhou University

S2: Atomic, Molecular, and Optical Physics

July 30th, Tuesday, Salon II	
Session Chair: Prof. Zhedong Zhang, City University of Hong Kong	
14:00-14:30 (Keynote talk)	Excited-state dynamics in organic photovoltaic systems under solar light equivalent excitation Prof. Chunfeng Zhang, Nanjing University
14:30-14:45 (Invited talk)	Topological metamaterial for super-imaging Prof. Dongyang Wang, University of Southampton
14:45-15:00 (Invited talk)	Quantum stripe ordering in a triangular optical lattice Prof. Zhifang Xu, Southern University of Science and Technology
15:00-15:15 (Invited talk)	Strong exciton-photon interaction and low-threshold lasing of halide perovskites Prof. Qing Zhang, Peking University
15:15-15:30 (Invited talk)	Plasmonic nanocavity induced room-temperature emissions of 2D dark excitons and charged biexcitons Prof. Danguan Lei, City University of Hong Kong
15:30-16:00	Coffee Break & Poster Session
Session Chair: Prof. Hui Yan, South China Normal University	
16:00-16:15 (Invited talk)	Transverse second harmonic generation from nonlinear optical waveguides Prof. Huakang Yu, South China University of Technology
16:15-16:30 (Invited talk)	Manipulate the flying and stored photons with cold atoms Prof. Jiefei Chen, Southern University of Science and Technology
16:30-16:45 (Invited talk)	Ultrafast control of microlasers based on perovskite microwires Prof. Kaiyang Wang, Harbin Institute of Technology, Shenzhen
16:45-17:00 (Invited talk)	Near-field topology: from polarization singularity to real-space spin Chern number Prof. Shubo Wang, City University of Hong Kong
17:00-17:15 (Invited talk)	Spin-exchange collisions near the p-wave Feshbach resonances in ^6Li Prof. Jiaming Li, School of Physics and Astronomy, Sun Yat-sen University
17:15-17:30 (Invited talk)	Quantum time reflection and refraction for matter waves Prof. Zhaoju Yang, Zhejiang university
17:30-17:45 (Invited talk)	Regulation of carrier dynamics in metal halide perovskite for light emission application Dr. Jia Guo, University of Macau
17:45-18:00 (Invited talk)	Persistent charging of CsPbBr_3 perovskite nanocrystals confined in glass matrix Dr. Gang Wang, University of Macau

July 31st, Wednesday, Salon II

Session Chair: Prof. Guichuan Xing, University of Macau

09:00-09:30 (Keynote talk)	Perovskite LEDs for lighting and displays Prof. Jianpu Wang, Changzhou University/Nanjing Tech University
09:30-09:45 (Invited talk)	Modification and optical properties of hybrid perovskite materials Prof. Tingchao He, Shenzhen University
09:45-10:00 (Invited talk)	Utilization of multiple energy levels for quantum computing and simulation in a trapped-ion system Prof. Le Luo, School of Physics and Astronomy, Sun Yat-sen University
10:00-10:15 (Invited talk)	Nearly quantum-limited microwave amplification via interfering degenerate stimulated emission in a single artificial atom Prof. Iochun Hoi, City University of Hong Kong
10:15-10:30 (Invited talk)	Study of colloidal quantum dot lasers and working physics Prof. Yue Wang, Nanjing University of Science and Technology
10:30-11:00	Coffee Break & Poster Session

Session Chair: Prof. Zhedong Zhang, City University of Hong Kong

11:00-11:15 (Invited talk)	Dipolar quantum degenerate gas of Erbium and beyond Prof. Peng Chen, HKUST(Guangzhou)
11:15-11:30 (Invited talk)	Ultrafast dynamics in an emerging material: Bi₂O₂Se films Prof. Feng He, Harbin Institute of Technology (Shenzhen)
11:30-11:45 (Invited talk)	Achieving near-unity red light photoluminescence in antimony halide crystals via polyhedron regulation Dr. Jinfeng Liao, University of Macau
11:45-12:00 (Invited talk)	Regulating the coordination geometry of polyhedral in zero-dimensional metal halides for tunable emission Dr. Zhipeng Zhang, University of Macau
12:00-12:15 (Invited talk)	Landau rainbow based on artificial gauge fields Prof. Cuicui Lu, Beijing Institute of Technology

S3: Biophysics and Soft Matter

July 30th, Tuesday, Salon III

Session Chair: Prof. Rui Zhang, Hong Kong University of Science and Technology

14:00-14:30 (Keynote talk)	Premelting-like phenomena in colloidal crystals and glasses Prof. Yilong Han, The Hong Kong University of Science and Technology
14:30-14:45 (Invited talk)	Fast algorithms for computing electro/hydrodynamic interactions in confined quasi-2D geometries Prof. Zecheng Gan, Hong Kong University of Science and Technology (Guangzhou)
14:45-15:00 (Invited talk)	Novel densest-packed crystal structures from cylindrical confinement Prof. Ho-Kei Chan, Harbin Institute of Technology, Shenzhen
15:00-15:15 (Invited talk)	Microfluidic manipulation of multiphasic liquid-liquid phase-separated (LLPS) systems for in vitro models Prof. Tiantian Kong, Shenzhen University
15:15-15:30 (Invited talk)	Studying cell-matrix mechanical interactions using fluorescent nanodiamonds Prof. Zhiqin Chu, The University of Hong Kong
15:30-16:00	Coffee Break & Poster Session

Session Chair: Prof. Jinbo Wu, Shenzhen MSU-BIT University

16:00-16:15 (Invited talk)	Identifying microscopic factors that influence ductility in disordered solids Prof. Ge Zhang, City University of Hong Kong
16:15-16:30 (Invited talk)	Effective spin coupling and spin structure in a buckled colloidal monolayer Prof. Xiaoguang Ma, Southern University of Science and Technology
16:30-16:45 (Invited talk)	Efficient red fluorescence and high photothermal conversion in the second near-infrared window from sodium-doped carbon dots Prof. Songnan Qu, University of Macau
16:45-17:00 (Invited talk)	Oscillatory motilities and density waves in phototactic microswimmers Prof. Alan Cheng Hou Tsang, The University of Hong Kong
17:00-17:15 (Invited talk)	Connecting dynamics, structures, and activities of proteins by Neutron scattering Prof. Xiangqiang Chu, City University of Hong Kong
17:15-17:30 (Oral talk)	Multifunctional e-skin based on non-overlapping mode for information expansion Dr. Ming Lei, University of Macau
17:30-17:45 (Oral talk)	Dynamics and hydrodynamic interactions of droplets laden by active agents Dr. Zheng Yang, Hong Kong University of Science and Technology
17:45-18:00 (Oral talk)	Quantifying chromosome structural dynamical pathways during cell fate decision making process Prof. Xiakun Chu, The Hong Kong University of Science and Technology (Guangzhou)
18:00-18:15 (Oral talk)	Geometry-originated universal relation for arbitrary convex hard particles Prof. Duanduan Wan, Wuhan University

July 31st, Wednesday, Salon III

Session Chair: Prof. Bingpu Zhou, University of Macau

09:00-09:30 (Keynote talk)	Emergence of hidden order and its dynamical evolution in the annealed Sherrington-Kirkpatrick model Prof. Leihan Tang, Westlake University
09:30-09:45 (Invited talk)	Making functional "hard" materials by soft matter Prof. Jinbo Wu, Shenzhen MSU-BIT University
09:45-10:00 (Invited talk)	Clustering behaviors of self-propelled robots in viscous fluids Prof. Shidi Huang, Southern University of Science and Technology
10:00-10:15 (Invited talk)	Ionic effects in ionic diffusiophoresis of chemically driven active colloids Prof. Yongxiang Gao, Shenzhen University
10:15-10:30 (Invited talk)	Strong tough hydrogel with programmable mechanical properties via a green and universal directional anneal-casting strategy for bioengineering Prof. Ziyi Dai, Shandong University
10:30-11:00	Coffee Break & Poster Session

Session Chair: Prof. Shidi Huang, Southern University of Science and Technology

11:00-11:15 (Invited talk)	Shedding light on mitochondria and ER mechanobiology by optogenetic mechanostimulators Prof. Liting Duan, The Chinese University of Hong Kong
11:15-11:30 (Invited talk)	Computational and theoretical study of biomolecular phase separation Prof. Xiangze Zeng, Hong Kong Baptist University
11:30-11:45 (Invited talk)	Liquid-liquid interface dynamics driven by bacterial swarm Prof. Song Liu, Southern University of Science and Technology
11:45-12:00 (Oral talk)	A dynamic entity formed by protein and its hydration water Dr. Yongfeng Ye, Shanghai Jiao Tong University
12:00-12:15 (Oral talk)	Studying electro-wetting using AFM Dr. Qing Yan, ShanghaiTech University
12:15-12:30 (Oral talk)	Lattice and orientational defects mediate collective and driven motions of cells in confluent tissues Dr. Jiusi Zhang, Hong Kong University of Science and Technology

S4: Condensed Matter Physics

July 30th, Tuesday, Ballroom II + III

Session Chair: Prof. Daoxin Yao, Sun Yat-sen University

14:00-14:30 (Keynote talk)	Atomic-scale investigation on the CuO₂ plane of infinite layer cuprates Prof. Xucun Ma, Tsinghua University
14:30-15:00 (Keynote talk)	Spin group: symmetry theory of magnetic geometry Prof. Qihang Liu, Southern University of Science and Technology
15:00-15:15 (Oral talk)	Berry-dipole Semimetals Dr. Zheng-Yang Zhuang, Sun Yat-sen University
15:15-15:30 (Oral talk)	Dynamical characterization of topological phases beyond the minimal models Dr. Xi Wu, Henan Normal University & Hunan University
15:30-16:30	Coffee Break & Poster Session

Session Chair: Prof. Shen Lai, University of Macau

16:30-17:00 (Keynote talk)	Theoretical study of bilayer and trilayer nickelate superconductors Prof. Daoxin Yao, Sun Yat-Sen University
17:00-17:15 (Oral talk)	Anisotropic magnetic response in superconducting topological crystalline insulator SnTe Dr. Chun Yu Wan, Hong Kong University of Science and Technology
17:15-17:30 (Oral talk)	Electrical 180° switching of Néel vector in spin-splitting antiferromagnet Dr. Xizhi Fu, The Hong Kong University of Science and Technology
17:30-17:45 (Oral talk)	Spectral analysis of the magneto-optical response in valley polarized Pb_{1-x}Sn_xSe Dr. Xiaoqi Ding, City University of Hong Kong
17:45-18:00 (Oral talk)	Room-temperature near-Infrared lasing from mechanically exfoliated InSe microflake Dr. Chun Li, Peking University

July 31th, Wednesday, Salon IV

Session Chair: Prof. Shen Lai, University of Macau

09:10-09:30 (Invited talk)	Engineering Dirac band in graphene by designer substrate Prof. Dongkeun Ki, University of Hong Kong
09:30-09:50 (Invited talk)	Heterostrain-induced energy splitting in h-BN encapsulated bilayer WSe₂ Prof. Chongyun Jiang, Nankai University
09:50-10:10 (Invited talk)	Manipulating effective models in van der waals materials by moiré engineering Prof. Li Huang, Southern University of Science and Tchonology
10:10-10:30 (Invited talk)	Switching intrinsic magnetic skyrmions in van der Waals multiferroic heterostructures Prof. Yusheng Hou, Sun Yat-Sen University
10:30-11:00	Coffee Break & Poster Session

Session Chair: Prof. Shen Lai, University of Macau

11:00-11:15 (Oral talk)	Topological responses of Weyl magnons from altermagnet Dr. Meng Han Zhang, Sun Yat-sen University
11:15-11:30 (Oral talk)	Observation of spin splitting in room-temperature metallic antiferromagnet CrSb Dr. Meng Zeng, Southern University of Science and Technology
11:30-11:45 (Oral talk)	Topological superconductivity in two-dimensional altermagnetic metals Dr. Di Zhu, Sun Yat-sen University
11:45-12:00 (Oral talk)	Disorder induced ferromagnetism in dirty metal - the Replica-Stoner approach Dr. Wenzhe Deng, Hong Kong University of Science and Technology
12:00-12:15 (Oral talk)	Intrinsic instabilities in Fermi glass Dr. Yat Fan Lau, Hong Kong University of Science and Technology

July 31th, Wednesday, Salon VII

Session Chair: Prof. Daoxin Yao, Sun Yat-sen University

09:10-09:30
(Invited talk)

Exploring the phase diagram and correlation effects in a bilayer two-orbital Hubbard model at half filling
Prof. Hanqing Wu, Sun Yat-sen University

09:30-09:50
(Invited talk)

New synthesis frontier of designed complex oxide thin films under strong oxidation for correlated electron systems
Prof. Zhuoyu Chen, Southern University of Science and Technology

09:50-10:10
(Invited talk)

X-ray scattering studies of charge correlations in cuprate superconductors
Prof. Qisi Wang, The Chinese University of Hong Kong

10:10-10:30
(Invited talk)

Crystal growth and manipulation of Kagome superconductor CsV₃Sb₅
Prof. Zhiwei Wang, Beijing Institute of Technology

10:30-11:00

Coffee Break & Poster Session

Session Chair: Prof. Daoxin Yao, Sun Yat-sen University

11:00-11:15
(Oral talk)

Crystal-symmetry-paired spin-valley locking in a layered room-temperature antiferromagnet
Dr. Xingkai CHENG, The Hong Kong University of Science and Technology

11:15-11:30
(Oral talk)

Interaction-enhanced many-body localization in a generalized Aubry-André model
Dr. Ke Huang, City University of Hong Kong

11:30-11:45
(Oral talk)

Robust quantum gates against correlated noise in integrated quantum chips
Dr. Xiu-Hao Deng, Southern University of Science and Technology

11:45-12:00
(Oral talk)

Strong reduction of thermal conductivity of WSe₂ with introduction of atomic defects
Dr. Bowen Wang, University of Macau

12:00-12:15
(Oral talk)

Orbital and spin bilinear magnetotransport effect in Weyl/Dirac semimetal
Dr. Zhanyunxin Du, City University of Hong Kong

S5: Interdisciplinary physics

July 30th, Tuesday, Salon V

Session Chair: Prof. Pengzhan Sun, University of Macau

14:00-14:25 (Keynote talk)	Interface engineering for van der Waals devices Prof. Zhiping Xu, Tsinghua University
14:25-14:45 (Invited talk)	Crack- and contamination-free transfer of graphene films Prof. Li Lin, Peking University
14:45-15:05 (Invited talk)	Overflow metabolism originates from growth optimization and cell heterogeneity Prof. Xin Wang, Sun Yat-sen University
15:05-15:25 (Invited talk)	Colony pattern development of a synthetic bistable switch Prof. Xiongfei Fu, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences
15:30-16:00	Coffee Break & Poster Session

Session Chair: Prof. Mingjie Li, The Hong Kong Polytechnic University

16:00-16:25 (Keynote talk)	ABO₃ perovskites for energy storage and catalysis Prof. Haitao Huang, The Hong Kong Polytechnic University, China
16:25-16:45 (Invited talk)	Encapsulation of nanocatalysts guided by Tamman temperature enables excellent performance Dr. Molly Meng-Jung Li, The Hong Kong Polytechnic University, China
16:45-17:05 (Invited talk)	Scanning transmission electron microscopy investigations of halide perovskite materials and photovoltaic devices Dr. Songhua Cai, The Hong Kong Polytechnic University, China

Session Chair: Prof. Pengzhan Sun, University of Macau

17:05-17:30 (Keynote talk)	Nanofluidic energy storage Prof. Dawei Wang, Shenzhen University of Advanced Technology
17:30-17:50 (Invited talk)	Interconnect and assembly in soft bioelectronics Prof. Ying Jiang, University of Macau
17:50-18:10 (Invited talk)	Deciphering antigen-specific T cell navigation tactics and cancer immune evasion in co-cultures Prof. Xuefei Li, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences

July 31st, Wednesday, Salon V

Session Chair: Prof. Xin Wang, Sun Yat-sen University

09:00-09:25
(Keynote talk)**Critical neural avalanches reconcile response reliability with sensitivity for optimal neural representation**

Prof. Changsong Zhou, Hong Kong Baptist University

09:25-09:45
(Invited talk)**Nonreciprocity enables large-scale mechanical spiral waves in bacterial living matter**

Prof. Yilin Wu, The Chinese University of Hong Kong

09:45-10:05
(Invited talk)**A novel pharmacological embedding space based on traditional Chinese medicine and AI large model framework toward drug-diseases associations**

Prof. Liang Tian, Hong Kong Baptist University

10:05-10:25
(Invited talk)**Quantitative ecology of host-associated microbiomes**

Prof. Lei Dai, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences

10:30-11:00

Coffee Break & Poster Session

11:00-12:30

PSHK annual General Meeting

S6: Materials Physics and Engineering

July 30th, Tuesday, Salon VI

Session Chair: Prof. LUO Huixia, Sun Yat-Sen University

14:00-14:20 (Keynote talk)	Large Nernst effect in magnetic topological semimetals Prof. XU Zhu-An, Zhejiang University
14:30-14:45 (Invited talk)	Giant anomalous Hall and Nernst effects in Ce-based intermetallic compounds: from heavy fermion to flat band Prof. JIA Shuang, Peking University
14:45-15:00 (Invited talk)	Spectroscopic discovery of spin-split antiferromagnets Prof. LIU Chang, Southern University of Science and Technology
15:00-15:15 (Invited talk)	Atomic structure-properties study of defects in emerging 2D materials Prof. LIN Junhao, Southern University of Science and Technology
15:15-15:30 (Invited talk)	Preparation and properties of medium/high-entropy superconductors Prof. LUO Huixia, Sun Yat-Sen University
15:30-16:20	Coffee Break & Poster Session

Session Chair: Prof. CHEN Shi, University of Macau

16:20-16:35 (Invited talk)	The fabrication of highly efficient perovskite solar cells and modules through surface modification Prof. MAI Yaohua, Jinan University
16:35-16:50 (Invited talk)	Widely-tunable magnetoelectric coupling in van der Waals multiferroics Prof. ZHENG Yi, Zhejiang University
16:50-17:05 (Invited talk)	Dualistic insulator states in 1T-TaS₂ crystals Prof. CAO Liang, High Magnetic Field Laboratory of the Chinese Academy of Sciences
17:05-17:20 (Invited talk)	AMX₂: A new family of two-dimensional materials Prof. PENG Jing, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences
17:20-17:35 (Invited talk)	Coexistence of ferroelectricity and antiferroelectricity in 2D van der Waals multiferroic Prof. PENG Bo, University of Electronic Science and Technology of China
17:35-17:50 (Invited talk)	Application on polymer nanocomposites Prof. SUN Guoxing, University of Macau
17:50-18:00 (Oral talk)	Regulating phase transition to fabricate highly efficient and stable perovskite solar cells Prof. LI Yang, Shihezi University

July 31st, Wednesday, Salon VI

Session Chair: Prof. ZHANG Xuming, Hong Kong Polytechnic University

09:00-09:15 (Invited talk)	Droplet-confined particle assembly and applications Prof. SHUI Lingling, South China Normal University
09:15-09:30 (Invited talk)	Continuous synthesis of nanoparticles inside an anti-fouling microreactor with defect-induced activity enhancement Prof. REN Kangning, Hong Kong Baptist University
09:30-9:45 (Invited talk)	Drug screening on digital microfluidics for precision medicine Prof. JIA Yanwei, University of Macau
9:45-10:00 (Invited talk)	Field-deployable systems for on-site nucleic acid analysis Dr. SHEN Ren, Hong Kong Polytechnic University & University of Macau
10:00-10:15 (Invited talk)	Electrically tunable optofluidic lenses for in-plane light manipulation Prof. CHEN Qingming, Sun Yat-Sen University
10:15-10:30 (Invited talk)	Artificial photosynthesis on chip: From CO₂ to glucose Dr. ZHU Yujiao, The Hong Kong Polytechnic University
10:30-11:00	Coffee Break & Poster Session

Session Chair: Prof. LUO Huixia, Prof. CHEN Shi, and Prof. ZHANG Xuming

11:00-11:15 (Invited talk)	Memristive vdWs Materials for Neuromorphic Computing Prof. SUN Linfeng, Beijing Institute of Technology
11:15-11:30 (Invited talk)	Formation and propagation of highly ordered organic semiconductors for device applications Prof. WANG Shu-Jen, Hong Kong Baptist University
11:30-11:45 (Invited talk)	Li-ion battery health prognosis using machine learning Prof. ZHANG Yunwei, Sun Yat-Sen University
11:45-12:00 (Invited talk)	High-precision defect control to regulate quantum states in oxide epitaxial films Prof. HUANG Haoliang, Quantum Science Center of Guangdong-Hong Kong-Macao Greater Bay Area
12:00-12:15 (Invited talk)	Two-dimensional elemental ferroelectricity Prof. LU Yunhao, Zhejiang University

S7: Scattering, Particle, Nuclear, and Plasma Physics

July 30th, Tuesday, Salon VII

Session Chair: Prof. Xiangqiang Chu, City University of Hong Kong

14:00-14:30 (Keynote talk)	Intense synchrotron X-rays: from scattering to plasma Prof. Yang Ren, City University of Hong Kong
14:30-14:50 (Invited talk)	CEvNS: a new opportunity to study neutrinos at spallation neutron sources Prof. XunJie Xu, IHEP, BEIJING
14:50-15:10 (Invited talk)	A study of perpendicularly magnetized Co-Pt alloy thin films by polarization neutron reflectometry Prof. Tao Zhu, Institute of Physics, Chinese Academy of Sciences
15:10-15:30 (Invited talk)	Laser nuclear physics: Highly nonlinear light-nucleus interaction Prof. Xu Wang, Graduate School of China Academy of Engineering Physics
15:30-16:00	Coffee Break & Poster Session

Session Chair: Prof. Hai-Feng Li, University of Macau

16:00-16:20 (Invited talk)	Structural characterization of lipid nanoparticles as mRNA drug delivery system using synchrotron small-angle X-ray scattering Prof. Na Li, Shanghai Advanced Research Institute, CAS
16:20-16:40 (Invited talk)	The very small angle Neutron scattering instrument and its application in characterizing the dynamic pathway dependence of morphology of mRNA LNP Prof. He Cheng, The Institute of High Energy Physics, Chinese Academy of Sciences
16:40-16:55 (Oral talk)	The structure-function relationship of immunocytokines studied by SAS Dr. Xin Jiang, City university of Hong Kong
16:55-17:10 (Oral talk)	Building a correlation between the structure and in vitro activity of mRNA lipid nanoparticles Dr. Xiaoxia Chen, Shanghai Jiao Tong University

Session Chair: Prof. Wei Chen, Sun Yat-sen University

17:30-17:50 (Invited talk)	Next-to-next-to-leading-order QCD corrections to pion electromagnetic form factors Prof. Long-Bin Chen, Guangzhou University
17:50-18:05	Dr. Sai: A Large-Model-Based Intelligent Agent System for BESIII Physics Analysis Prof. Jianfang Li, The Institute of High Energy Physics of the Chinese Academy of Sciences
18:05-18:20	Control of laser-driven high-current relativistic electron beam and its applications Prof. Taiwu Huang, Shenzhen Technology University

S8: Quantum and Statistical Physics

July 30th, Tuesday, Salon VIII

Session Chair: Prof. Haiping Huang, Sun Yan-sen University

14:00-14:30 (Keynote talk)	Fluctuation phenomena in entanglement dynamics Prof. Chushun Tian, Institute of Theoretical Physics, Chinese Academy of Sciences
14:30-14:50 (Invited talk)	A new information thermodynamics Prof. Bing Miao, University of Chinese Academy of Sciences
14:50-15:10 (Invited talk)	Order parameters for non-equilibrium dynamics Prof. Haiping Huang, Sun Yan-sen University
15:10-15:30 (Invited talk)	Application of optimal control in quantum parameter estimation and quantum hypothesis testing Prof. Xin Wang, City University of Hong Kong
15:30-16:00	Coffee Break & Poster Session

Session Chair: Prof. Yongqing Cai, University of Macau

16:00-16:20 (Invited talk)	Quantum algorithms for the electronic structure problem Prof. Zhenyu Li, University of Science and Technology of China
16:20-16:40 (Invited talk)	Developing a molecular simulation package in connection with AI tools Prof. Yi Qin Gao, Peking University
16:40-17:00 (Invited talk)	Photoexcitation charge and spin dynamics in condensed phase materials Prof. Run Long, Beijing Normal University
17:00-17:20 (Invited talk)	Phonon dynamics properties of CsAg₅Te₃-based thermoelectric materials by combining first-principles calculations and neutron scattering experiments Prof. Baotian Wang, Institute of High Energy Physics, Chinese Academy of Sciences
17:20-17:40 (Invited talk)	Atomic and carrier dynamics in low-dimensional materials explored by density functional theory Prof. Yongqing Cai, University of Macau
17:40-18:00 (Invited talk)	The progress of the neutron total scattering diffractometer MPI at CSNS Prof. Wen Yin, Institute of High Energy Physics, Chinese Academy of Sciences
18:00-18:20 (Invited talk)	AlphaFold database reveals evolutionary trends in protein folding and dynamics Prof. Qian-Yuan Tang, Hong Kong Baptist University

July 31st, Wednesday, Salon VIII

Session Chair: Prof. Chi Ho Yeung, The Education University of Hong Kong

09:00-09:20 (Invited talk)	Experimental studies of open quantum systems with atoms and ions Prof. Le Luo, Sun Yat-sen University
09:20-09:40 (Invited talk)	Coexisting Néel and charge-density-wave orders in attractive three-color fermions Prof. Yu Wang, Wuhan University
09:40-10:00 (Invited talk)	Thermodynamics, topology, and interaction effects in ultracold quantum gases Prof. Yangqian Yan, Chinese University of Hong Kong
10:00-10:15 (Oral talk)	Deep generative modelling of the canonical ensemble with differentiable thermal properties Dr. Yaowen Zhang, The Hong Kong University of Science and Technology
10:15-10:30 (Oral talk)	Quantum simulation with full quantum eigensolver Prof. Shijie Wei, Beijing Academy of Quantum Information Sciences
10:30-11:00	Coffee Break & Poster Session

Session Chair: Prof. Le Luo, Sun Yat-sen University

11:00-11:20 (Invited talk)	Energy landscapes? Prof. Chi Ho Yeung, The Education University of Hong Kong
11:20-11:40 (Invited talk)	Fluctuation induced transitions across frequency bands in balanced excitatory-inhibitory spiking networks Prof. Xiyun Zhang, Jinan University
11:40-11:55 (Oral talk)	Cryogenic MEMS-based circuit modules for quantum-bits control and readout Prof. Hua Chen, Southern University of Science and Technology
11:55-12:10 (Oral talk)	Fast generation and preservation of Schrödinger cat states using a Kerr-tunable superconducting resonator Prof. Zhirong Lin, Shanghai Institute of Microsystem and Information Technology
12:10-12:25 (Oral talk)	Direct evidence for cosmic-ray-induced correlated errors in superconducting qubit array Prof. Xue-Gang Li, Beijing Academy of Quantum Information Science

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1	S1-Astrophysics and Astronomy	Beaming Effect in TeV Blazars	School of Physics and Materials Science, Guangzhou University	YanJun Qian
2	S1-Astrophysics and Astronomy	AGNs in the extremely galaxy overdensity BOSS 1441: A Chandra observation	Guangzhou University	Jiahua Wu
3	S1-Astrophysics and Astronomy	Zoom-In Cosmological Simulation for a Small Scale Enhanced Primordial Power Spectrum	The Chinese University of Hong Kong	Jianhao WU, Tsang Keung CHAN
4	S1-Astrophysics and Astronomy	Correlation between radio loudness and the Eddington ratio in quasars	Ghuangzhou University	Shen Jing-Jing, Fan Jun-Hui
5	S1-Astrophysics and Astronomy	Training Graduate Students in AGN Classes	Center for Astrophysics, Guangzhou University, China	Junhui Fan
6	S1-Astrophysics and Astronomy	Observational Study of Mrk 421 and Mrk 501 Based on LHAASO	Guangzhou University	Shuochun Wang
7	S1-Astrophysics and Astronomy	Beaming Effect and Blazar Sequence	Guangzhou University	Wen-xin Yang, Jun-hui Fan, Yi Liu, Zhi-yuan Pei
8	S1-Astrophysics and Astronomy	Mid-infrared Flux and Color Variability of Narrow-Line Seyfert 1 Galaxy Sample Using the WISE/NEOWISE light curves	Guangzhou University	Huifang Xie, JiaHua Wu, LiMing Dou
9	S1-Astrophysics and Astronomy	Selection of High-Amplitude Variable Quasar: A Random Forest-Based Approach	SHENZHEN TECHNOLOGY UNIVERSITY	WANG HENG

Accepted Poster List



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11	S2 - Atomic, Molecular, and Optical Physics	On-Chip Nonlinear SU(1,1) Interferometers	City University of HongKong	Yue LI, Xiaotian Zhu, Sai Tak Chu, Edwin Yue Bun Pun, Jeff OU
12	S2 - Atomic, Molecular, and Optical Physics	Optical interference by amplitude measurement	City University of Hong Kong	Yunxiao Zhang, Xuan TANG, Xueshi Guo, Liang Cui, Xiaoying Li, Z. Y. Ou
13	S2 - Atomic, Molecular, and Optical Physics	Advanced Miniature Lasers Based on Colloidal Semiconductor Nanoplatelets	Institute of Applied Physics and Materials Engineering, University of Macau	Rui Duan, Yi Tian Thung, Qiang Zhang, Zitong Zhang, Baile Zhang, Handong Sun
14	S2 - Atomic, Molecular, and Optical Physics	Metasurface-based Single-pixel Hybrid Neural Network for Handwritten Digit Recognition Through Scattering Media	University of Macau	Xuan Zhang, Jiahao Xiong, Ai Fu, Guoxing Zheng, Zile Li, Hong-Chao Liu
15	S2 - Atomic, Molecular, and Optical Physics	Phase Compensation for Control of Laser-Driven Frequency Comb via High-Order Harmonic Generation	Lanzhou University	Lin Han
16	S2 - Atomic, Molecular, and Optical Physics	Enhanced Amplified Spontaneous Emission from All-Inorganic Perovskite Thin Films by Composition Engineering	University of Macau	Yulin MAO
17	S3 - Biophysics and Soft Matter	Different Dynamical States of Spontaneous Activity of Neurons in a Network	The Chinese University of Hong Kong	Lik Chun CHAN, Tsz Fung KOK, Emily S.C. Ching
18	S4 - Condensed Matter Physics	Exploring Entanglement Spectrum and Phase Diagram in multi-electron Quantum Dot Chains	City University of Hong Kong	Guanjie He, WANG Xin

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20	S4 - Condensed Matter Physics	Floquet non-Abelian topological insulator and multifold bulk-edge correspondence	Institute of Physics, Chinese Academy of Sciences	Tianyu Li, Hu Haiping
21	S4 - Condensed Matter Physics	Continuous-wave Pumped Perovskite Lasers with Device Area Below $1 \mu\text{m}^2$	School of Materials Science and Engineering, Peking University	Jiepeng Song, Tang Kwok Kwan, Zhang Qing
22	S4 - Condensed Matter Physics	Boundary flat bands with topological spin textures protected by subchiral symmetry	Sun Yat-Sen University	Mo Yijie, Wang Xiao-Jiao, Yu Rui, Yan Zhongbo
23	S4 - Condensed Matter Physics	Theoretical study of multi-magnon excitations in RIXS spectra of 2D cuprates antiferromagnets	Sun Yat-Sen University	Kai-Yuan Qi, Dao-Xin Yao
24	S4 - Condensed Matter Physics	The geometric theory of twisted bilayer graphene and rotating bilayer graphene	Sun Yat-sen University	Jia-Zheng Ma, Trinanjan Datta, Dao-Xin Yao
25	S4 - Condensed Matter Physics	Fractional Chern insulator candidate in twisted bilayer checkboard lattice	Sun Yat-sen University	Jia-Zheng Ma, Rui-Zhen Huang, Guo-Yi Zhu, Ji-Yao Chen, Dao-Xin Yao
26	S4 - Condensed Matter Physics	Crystal-symmetry-paired spin-valley locking in a layered room-temperature antiferromagnet $\text{Rb}_{1-5}\text{V}_2\text{Te}_2\text{O}$	Southern University of Science and Technology	Fayuan Zhang, Xingkai Cheng, Zhouyi Yin, Changchao Liu, Yue Zhao, Guanghan Cao, Shan Qiao, Junwei Liu, Chaoyu Chen
27	S5 - Interdisciplinary Physics	Superionic proton conduction along monolayer mica surface	University of Macau	Yu Ji

Accepted Poster List



Index	Session NO.	Poster Title	Affiliation	Author
28	S6 - Materials Physics and Engineering	Resonant transition metal Ti or Ta doping in high mobility transparent conducting CdO	Shantou University	Chaoping Liu, Wu Shan, Deng Bei, Ho Chun Yuen, Yu Kin Man
29	S6 - Materials Physics and Engineering	High Throughput Digital Microfluidics platform for particle screening	The Hong Kong Polytechnic University	Chi Chung Tsoi, Xuming Zhang
30	S6 - Materials Physics and Engineering	Polaron engineering promotes NIR-II absorption of carbon quantum dots for bioimaging and cancer therapy	University of Macau	Tesen Zhang
31	S6 - Materials Physics and Engineering	Excitonic Gain of a Monolayer Semiconductor in an Ultrahigh Quality Cavity	University of Macau	Tianhua Ren, Handong Sun
32	S6 - Materials Physics and Engineering	Multifunctional Compounds for High-Performance Perovskite Solar cells	University of Macau	Shengwen Li
33	S6 - Materials Physics and Engineering	Interfacial electronic structure of 2D perovskite passivated 3D perovskite by in-situ investigation	University of Macau	Jielei Li
34	S6 - Materials Physics and Engineering	Precursor treatment with 2D perovskite for high performance inverted perovskite solar cells	University of Macau	Ruifeng Zheng
35	S6 - Materials Physics and Engineering	Ferroelectric Effect Enables Homogeneous Electrode/Electrolyte Interface for High-Performance Potassium Ion Batteries	University of Macau	RUI LI
36	S8 - Quantum and Statistical Physics	Extracting Error Thresholds through the Framework of Approximate Quantum Error Correction Condition	Physics Department, Tsinghua University	Yuanchen Zhao, Dong E. Liu

Index	Session NO.	Poster Title	Affiliation	Author
37	S8 - Quantum and Statistical Physics	Promoted Electronic Coupling of Acoustic Phonon Modes in Doped Semimetallic MoTe ₂	Univeristy of Macau	Xiangyue Cui, Cai Yongqing
38	S8 - Quantum and Statistical Physics	Mechanical puzzle at atomic level: understanding the organic-inorganic coupling in layered perovskites	University of Macau	Hejin Yan, Tingting Yin, Yongqing Cai
39	S8 - Quantum and Statistical Physics	First Principles Study of Precursor Components Affecting Crystallization and Performance in Lead Halide Perovskite	University of Macau	Hongfei Chen, Yongqing Cai
40	S8 - Quantum and Statistical Physics	Direct evidence for cosmic-ray-induced correlated errors in superconducting qubit array	Beijing Academy of Quantum Information Science	Xue-Gang Li, Jun-Hua Wang, Yao-Yao Jiang, Guang-Ming Xue, Xiao-Xia Cai, Jun Zhou, Ming Gong, Zhao-Feng Liu, Shuang-Yu Zheng, Deng-Ke Ma, Mo Chen, Wei-jiu Sun, Shuang Yang, Fei Yan, Yi-Rong Jin, Xue-Feng Ding, Hai-Feng Yu
41	S8 - Quantum and Statistical Physics	Non-maximal chaos in some Sachdev-Ye-Kitaev-like models	Graduate School of China Academy of Engineering Physics	Chen Ma, Chushun Tian
42	S8 - Quantum and Statistical Physics	Fast generation and preservation of Schrödinger cat states using a Kerr-tunable superconducting resonator	Shanghai Institute of Microsystem and Information Technology	Zhirong Lin, Xiaoliang He, Zhen Wang
43	S8 - Quantum and Statistical Physics	Neural network based time-resolved state tomography of superconducting qubits	Institute of Applied Physics and Materials Engineering, University of Macau	Ziyang You, Jiheng Duan, Wenhui Huang, Libo Zhang, Song Liu, Youpeng Zhong, Hou lan
44	S8 - Quantum and Statistical Physics	Dynamic phases induced by two-level system defects on driven qubits	University of Macau	Yanxiang Wang, Ziyang You, Hou lan

General Information



Registration Desk

The YGA 2024 registration desk will be in the foyer outside Foyer, 3F, Studio City, Macau. The desk will be open at the following times: **July 29th, Monday 14:00 - 20:00**

Lunch

Lunch on 30-31 July, Spotlight Restaurant (12:30-14:00)

Banquet

Date and Time: 30 July (18:30 - 20:30)
Place: Ballroom I

How to get to YGA 2024

- From Gongbei Port (Border Gate)
 - Operating hours: 06:00 - 01:00
- From Hengqin Port
 - Operating hours: 24 hours
- From HZMB Port
 - Operating hours: From Hong Kong: 24 hours; From Zhuhai: 08:00 - 22:00
- From Macau International Airport
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- Shekou Port (Sailing service suspended until further notice)
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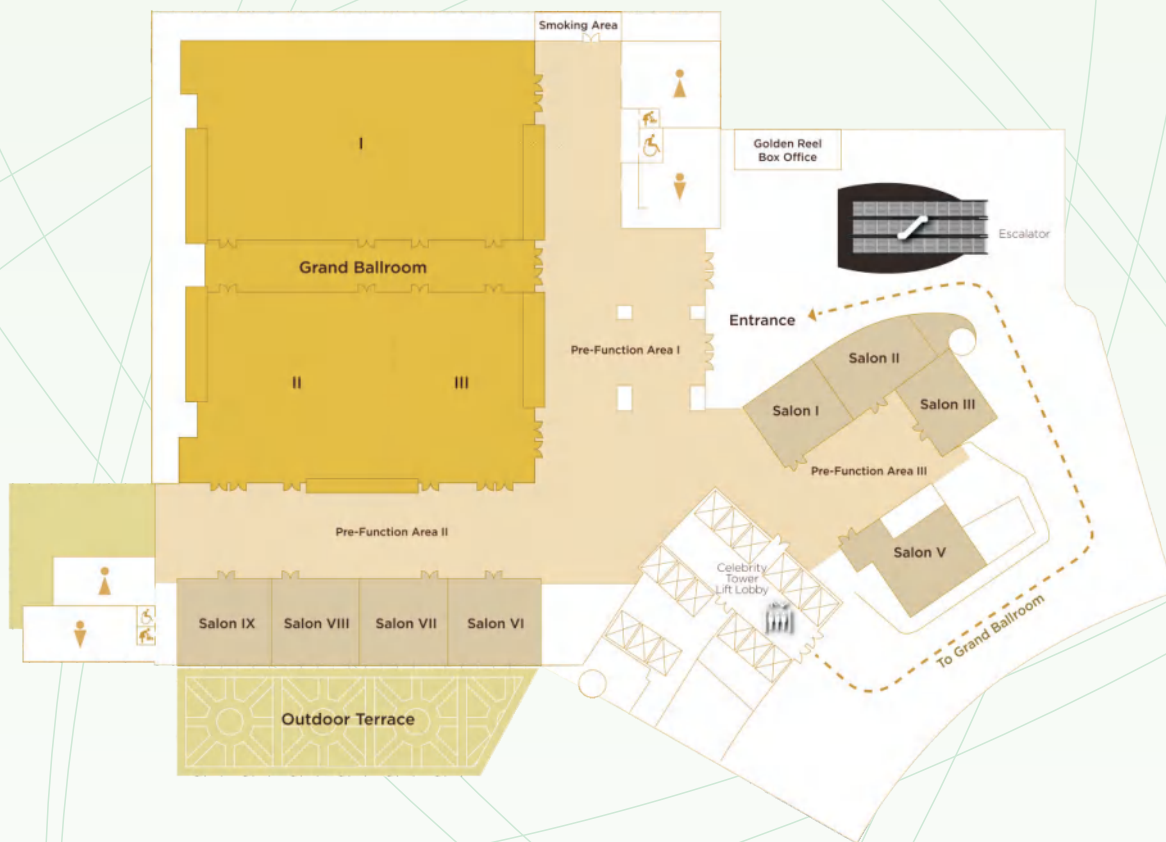
The Studio City complimentary shuttle service schedule:

STUDIO CITY FREE SHUTTLE BUS SCHEDULE			
Locations	From Studio City	To Studio City	Frequency
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	10:05-23:30 (Mon to Thu)	9:30-23:05 (Mon to Thu)	9:30-23:05 (Mon to Thu)
Macau Ferry Terminal	11:10-21:50	10:30-21:05	20-35 mins
Taipa Ferry Terminal & Macau International Airport	10:00-22:15	9:30-21:30	10-15 mins
Macau Central District	12:00-21:30	12:30-21:15	15 mins
Hengqin Border	9:55-20:40 (Mon to Thu)	10:00-21:00 (Mon to Thu)	10-15 mins 30 mins (After 20:00)
	9:50-20:35 (Fri to Sun)	10:00-21:00 (Fri to Sun)	5-10 mins 15-20 mins (After 20:00)
City of Dreams	10:05-23:30 (Mon to Thu)	9:40-23:15 (Mon to Thu)	8-10 mins 10-30 mins (After 21:00)
	9:35-23:30 (Fri to Sun)	9:10-23:15 (Fri to Sun)	6-8 mins 15-20 mins (After 21:00)
Altira	11:30-22:25	10:50-22:05	40-65 mins

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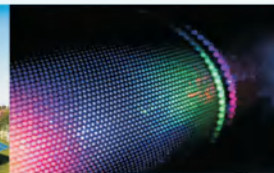
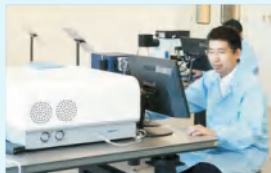
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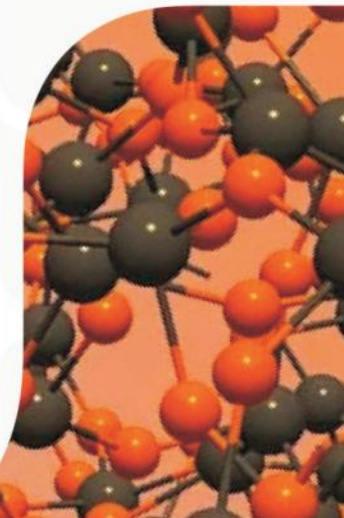
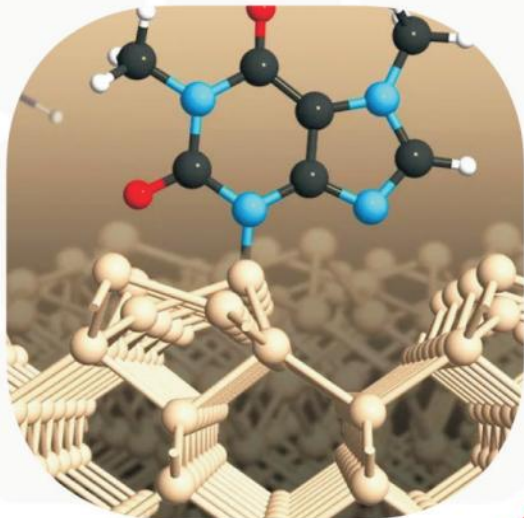
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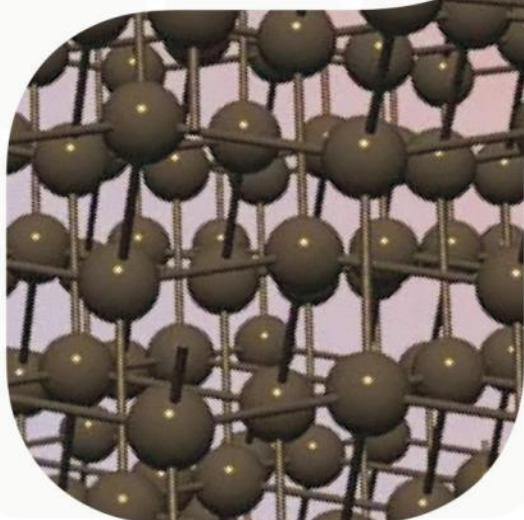
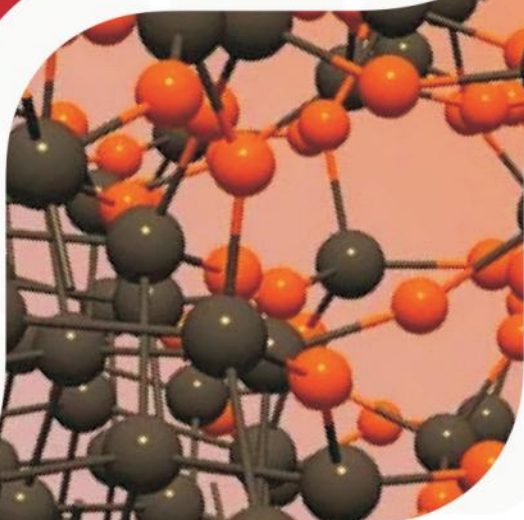
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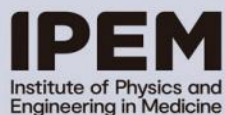
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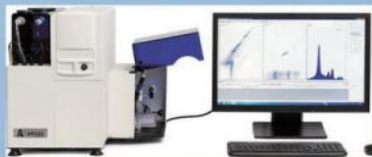


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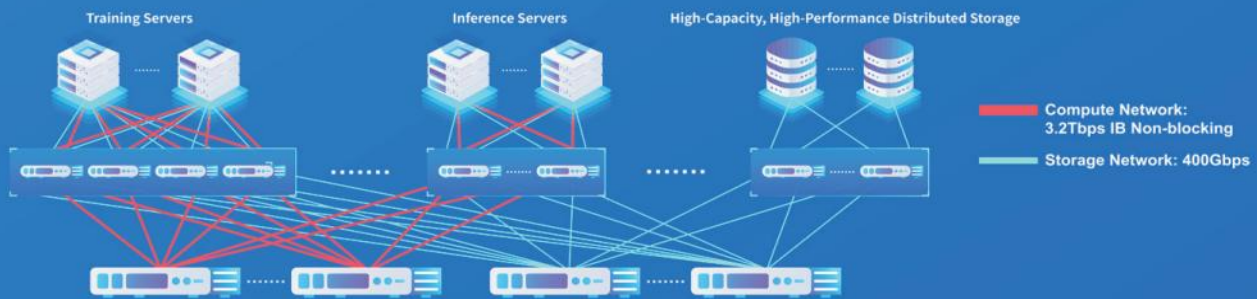
Cost-Effective

As low as
1.6 RMB per GPU-hour

Professional & Simple

24/7 Online Professional Team
5-Minute Response Time

Typical Supercomputing Architecture for Large Model Infrastructure



Paratera Supercomputing Cloud

The Paratera Supercomputing Cloud is a comprehensive supercomputing service platform developed by Parallel Technology. It integrates the computing power network service model with cloud computing technology, leveraging our extensive research and development expertise in high-performance computing.

Resources on Demand

Quick & Easy Setup

User-friendly

Professional Support

Free Trial for New Users

New users may apply for a trial can receive up to **2000 core hours/200 RMB GPU hours** of computing resources for free. Our staff will contact you within 1-3 business days to assist with the trial setup..



Free trial



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并行智算云 大模型算力触手可及

面向大模型训练、推理和超级计算等多种应用场景，融合超算架构和虚拟化云架构，打造的高质量、高性能、高性价比的GPU云算力平台。

资源丰富

4090、A100、H800
等GPU资源

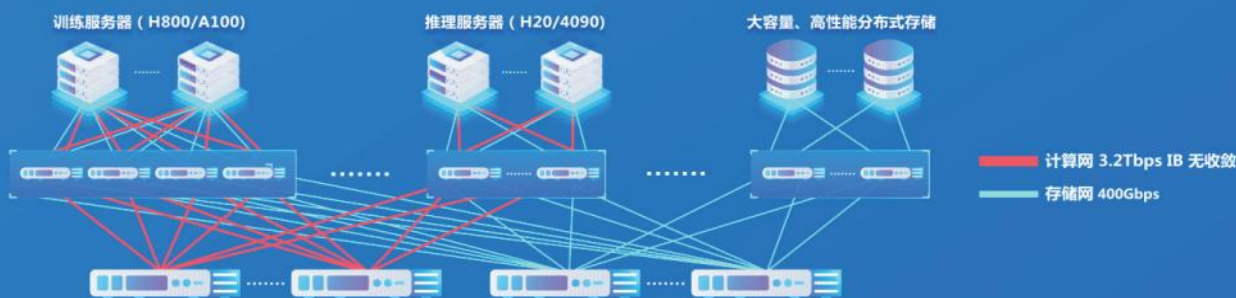
省钱

低至
1.6元 每卡时

专业省心

专家团队
7×24小时在线服务
5分钟响应

典型超算架构大模型基础设施



并行超算云

并行超算云是并行科技基于算力网络服务模式与云计算技术，结合自身在高性能计算领域多年研发经验推出的一站式超算服务平台。

丰富资源 随时调用

极速开通 提升效率

操作便捷 上手容易

服务至上 专业守护

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审核通过后，1-3个工作日内会有工作人员联系您并协助开通试算。



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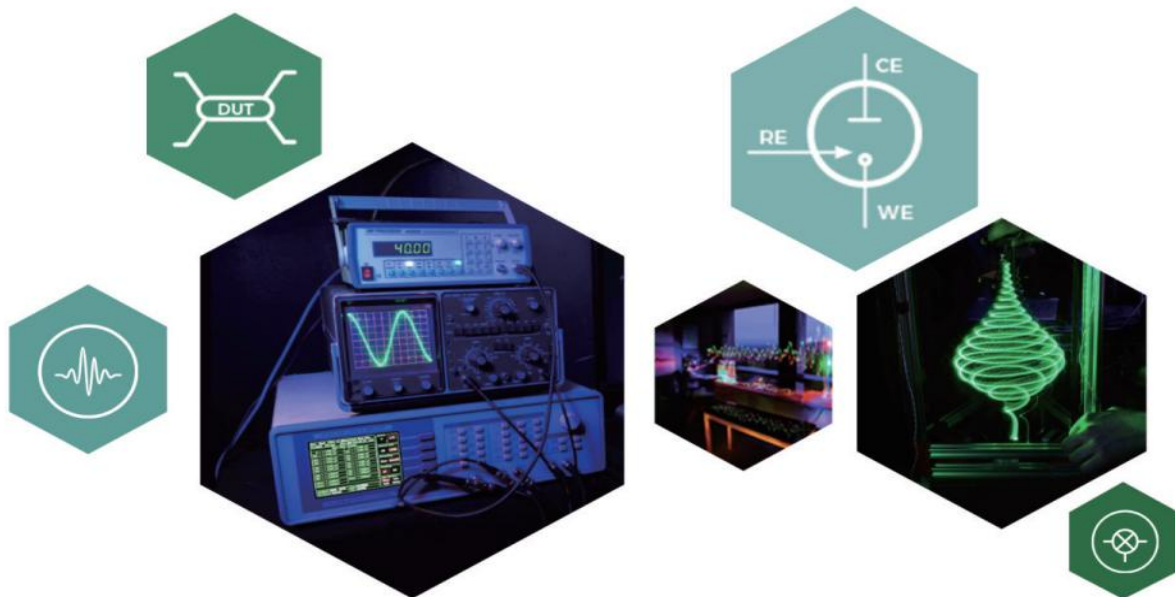
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SINE SCIENTIFIC INSTRUMENTS



Sine Scientific Instruments has been designing and supporting a diverse range of precision test instruments for research and industry since the early 2000s. Our products include lock-in amplifiers, impedance analyzers, electrochemical impedance spectroscopy, source meters, high-voltage power amplifiers and other measurement and control instruments. Based on user requirements, we can provide the optimal customized test solutions.

Today our services have been utilized by hundreds of academic, government and corporate users all over the world, including Massachusetts Institute of Technology, University of Toronto, University of Wisconsin–Madison and Weizmann Institute of Science.



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- DC to 400 MHz frequency range
- 2.5 nV/ $\sqrt{\text{Hz}}$ Hz input noise
- 120 dB dynamic reserve
- Scope, FFT, PID, AM Mod
- 1 or 2 independent lock-in units
- Up to 4 demodulators
- USB2.0, RS232, LAN Port



Multi-Channel Lock-In Amplifiers

- Up to 10 lock-in Amplifier modules
- 1 mHz to 500 kHz frequency
- 1 nV to 5 V full-scale sensitivity
- Scope, Spectrum Analyzer
- Up to 8 demodulators and 2 PID controllers for each module
- Module Unit Size: 180mm*106mm*38mm



Electrochemical Impedance Spectroscopys

- 0.1Hz~1MHz frequency range
- Measure accuracy < 0.5%
- Range: $\pm 10\text{V}$ Potential and $\pm 300\text{ mA}$ current
- Measure Mode: Potentiostat, Cyclic Voltammetry, A.C. Impedance



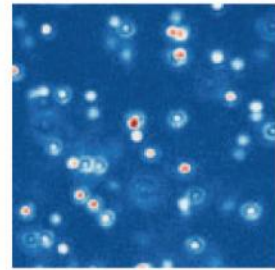
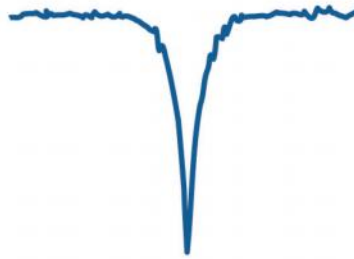
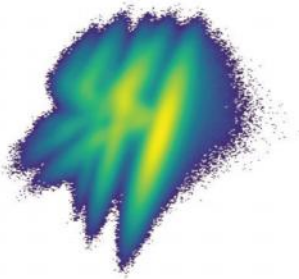
Source Meter Units

- 0.012% basic measure accuracy
- 6 $\frac{1}{2}$ -digit measure resolution
- Range: 10nA~1A, 20mV~200V
- Wideband Noise: 3 mVrms Typ
- Compatible with KEITHLEY 2450
- Resolution (I/V): 10 fA/10 nV



Time Tagger

时间相关单光子计数 | 符合测量分析 | 激光共聚焦显微成像



1.5 ps
时间分辨率
RMS jitter

1 ps
数字分辨率
bin width

70 M tags/s & 1200 M tags/s
通过USB 3.0 & qSFP+的数据传输率

4 ~ 144 个
输入通道

1.5 ns
死时间

Python, Matlab, LabVIEW, C#/C++
等多种开源函数库

用智能超算 問景派科技

廣州景派科技有限公司

廣州景派科技有限公司，業界領先的高性能計算（HPC）解決方案提供者，專註服務於科研與企業用戶，覆蓋物理計算、生命科學、化學、材料分析、人工智能、工程仿真等前沿領域。我們以技術創新為核心，已斬獲多項軟件著作權與國家專利，旗下「兀景派」與「iHPC」雙品牌並駕齊驅，屢獲「高新技術企業」、「廣東省守合同重信用企業」等權威認可。

景派科技憑借深厚的HPC領域積澱，為客戶提供量身定製的高性能計算解決方案，包括但不限於服務器集群構建、集群監控管理軟件開發、環境優化、超算機時與高性能計算運維服務等。我們致力於以專業技術和卓越服務，加速高校科研突破，驅動企業研發創新，共築高性能計算新未來。



100%中獎

2024.7.29-8.1

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