

# Schedule

Time	June 30	July 1	July 2	July 3	July 4
08:00 - 08:30		Registration			
08:30 - 08:45		Opening	<b>George Karniadakis</b> Plenary Talk 2	Parallel Session 3 [CT4-YH501] · [CT5-YH502]	Satellite Meetings
08:45 - 09:00					
09:00 - 09:30		<b>Tao Tang</b> Plenary Talk 1	Coffee Break	[CT6-YH503] · [CT7-YH504]	
09:30 - 10:00		Coffee Break	Parallel Session 2A [MS3A-YH501] · [MS5A-YH502] · [MS6A-YH503]	Coffee Break	
10:00 - 10:30		<b>Zhiwen Zhang</b> Invited Talk 1A	[MS7A-YH504] · [MS9A-YH505] · [SPP-HSSH401]	<b>Yuling Jiao</b> Invited Talk 3A	
10:30 - 11:10		<b>Qianxiao Li</b> Invited Talk 1B		<b>Renier Mendoza</b> Invited Talk 3B	
11:10 - 11:50				Closing & Second Group Photo	
11:50 - 12:00		First Group Photo & Lunch Break	Lunch Break		
12:00 - 14:00					
14:00 - 16:00	Registration	Parallel Session 1A [MS1A-YH501] · [MS2-YH502] · [MS4A-YH503] [MS8A-YH504] · [MS10-YH505] · [CT1-HSSH401]	Parallel Session 2B [MS3B-YH501] · [MS5B-YH502] · [MS6B-YH503] [MS7B-YH504] · [MS9B-YH505]		
16:00 - 16:30		Coffee Break	Coffee Break		
16:30 - 17:10		Parallel Session 1B [MS1B-YH501] · [MS4B-YH502] · [MS8B-YH503] [CT2-YH504] · [CT3-YH505]	<b>Jae-Hun Jung</b> Invited Talk 2A		
17:10 - 17:50			<b>Takeshi Ogita</b> Invited Talk 2B		
17:50 - 18:30			<i>Travel to Banquet Venue</i>		
18:30 - 19:30		<b>Poster Session</b> with cocktails and drinks	Banquet at Barbara's Heritage Restaurant		
19:30 - 21:00					

[Session-Room] · SPP: A Student Paper Prize session · CT: A Contributed Talk session

Registration on June 30 will be at the ground floor of the Henry Sy Sr. Hall (HSSH). On July 1, the registration area will be just outside Room HSSH401.

Plenary and invited talks, including sessions CT1 and SPP, will be held in the 4th-floor Multipurpose Room of Henry Sy Sr. Hall (HSSH401), also known as The Verdure. All other sessions will be on the 5th floor of Don Enrique Yuchengco Hall (YH).

The Poster Session on July 1 will be held just outside the Verdure (HSSH401).

The banquet on July 2 will be at Barbara's Heritage Restaurant, Plaza San Luis Complex, Heneral Luna St., Intramuros, Manila, 1002 Metro Manila. (About 25 to 35 minutes from De La Salle University by private transportation.)

Private transportation will be provided by the organizers to bring participants to and from the banquet venue.

Code	Mini-Symposium Title	Organizers
MS1	Quantifying Uncertainty in Scientific Computing and Its Applications A · B	Xiaofei Guan · Hongqiao Wang · Zihao Yang
MS2	Several Aspects of Partial Differential and Difference Equations	Takiko Sasaki · Tetsuji Tokihiro
MS3	Recent Advances in Reliable Numerical Computations and Applications A · B	Takeshi Ogita
MS4	Structured Matrix Computations and Related Applications A · B	Tsung-Ming Huang · Mei-Heng Yueh
MS5	Mathematical Models, Computational Methods and Applications in Quantum Mechanics A · B	Qinglin Tang · Wei Jiang
MS6	Deep Learning Method in Scientific Computing · B	Yuling Jiao · Cheng Yuan
MS7	Recent Advances in PDE-Constrained Optimization and Optimal Controls A · B	Wei Gong · Hiroshi Fujiwara · Julius Fergy Rabago
MS8	Mathematical Biology and Ecology A · B	Noel Fortun · Angelyn Lao
MS9	Bridging Physics and Learning: Recent Advances in Scientific Machine Learning A · B	Ling Guo · Liang Yan
MS10	Recent developments in Scientific Machine Learning	Zhiwen Zhang

## Plenary Talks\*, July 1, 09:00–10:00 & July 2, 08:30–09:30

Schedule	Speaker	Plenary Talks
July 1, 09:00 - 10:00	Tang Tao	Nonlinear energy stability for phase-field models: numerics and analysis
July 2, 08:30 - 09:30	George Karniadakis	Automatic discovery of algorithms and neural architectures in scientific machine learning

## Invited Talks\*, July 1, 3, 10:30–11:50 & July 2, 16:30–17:50

Schedule	Speaker	Plenary Talks
July 1, 10:30 - 11:10	Zhiwen Zhang	DeepParticle: learning multiscale PDEs with data generated from interacting particle methods
July 1, 11:10 - 11:50	Qianxiao Li	Learning, approximation and control
July 2, 16:30 - 17:10	Jae-Hun Jung	Topological data analysis of time series data: Graph-based and exact persistent homology methods
July 2, 17:10 - 17:50	Takeshi Ogita	Accurate and verified numerical linear algebra
July 3, 10:30 - 11:10	Yuling Jiao	Deep PDE's solvers: error analysis and adaptive scheme
July 3, 11:10 - 11:50	Renier Mendoza	Optimization methods in applied differential equation models

\*All plenary and invited talks, including sessions CT1 and SPP, will be held in the 4th-floor Multipurpose Room, HSSH 401, also known as The Verdure. All other sessions will be held on the 5th floor of Don Enrique Yuchengco Hall (YH).

## Day 1, Parallel Session 1A, 14:00 - 16:00

July 1, YH501	Speaker	MS1A: Quantifying Uncertainty in Scientific Computing and Its Applications
14:00 - 14:30	Yin Junfeng	Surrogate hyperplane Bregman-Kaczmarz methods for solving linear inverse problems
14:30 - 15:00	Qiuqi Li	Localized Dynamic Mode Decomposition with Temporally Adaptive Partitioning
15:00 - 15:30	Yue Qiu	Resolution invariant deep operator network for PDEs with complex geometries
15:30 - 16:00	Xiang Sun	Tensor decomposition-based neural operator with dynamic mode decomposition for parameterized time-dependent problems

July 1, YH502	Speaker	MS2: Several Aspects of Partial Differential and Difference Equations
14:00 - 14:30	Testuji Tokihiro	A blow-up theorem for discrete semilinear wave equation
14:30 - 15:00	Tatsuki Mori	Direction of a bifurcating branch and the stability of stationary solutions of nonlocal Allen-Cahn equation
15:00 - 15:30	Kohei Higashi	Discretization of Nonlinear Integrable Systems with Singular Integral Terms
15:30 - 16:00	Takiko Sasaki	Numerical analysis of the rescaling method for quenching problems

July 1, YH503	Speaker	MS4A: Structured Matrix Computations and Related Applications
14:00 - 14:30	Ping-Kong Huang	Application of SDRE to Achieve Gait Control in a Bipedal Robot for Knee-Type Exoskeleton Testing
14:30 - 15:00	Mei-Heng Yueh	Authalic Energy Minimization for Area-Preserving Parameterizations
15:00 - 15:30	Shu-Min Tan	A Shot of Origin: How a Mobile App Reveals the True Source of Your Coffee
13:30 - 16:00	Yung-Ta Li	Pseudospectral methods for solving differential equations by a matrix factorization approach

July 1, YH504	Speaker	MS8A: Mathematical Biology and Ecology
14:00 - 14:30	Aurelio de los Reyes V	Disentangling the Climate's Dual Role on Dengue Transmission: A Multi-regional Causal Inference Approach
14:30 - 15:00	Jomar Rabajante	A Classical Machine Learning Approach to Estimating $R_0$ in Infectious Disease Models
15:00 - 15:30	Leneth Sajulga	Disease Control via Different Intercropping Strategies: A Modeling Approach on the Persistent Transmission of Aphid-Borne Viruses in Zea mays L. Cultivation
15:30 - 16:00	Giovannie Entero	Analysis of Ecological Niche Dynamics of a Phytoplankton Community in Relation to Toxic Harmful Algal Blooms (HABs) Caused by Pyrodinium bahamense

July 1, YH505	Speaker	MS10: Recent developments in Scientific Machine Learning
14:00 - 14:30	Zhiwen Zhang	Neural Network Poisson-Boltzmann Electrostatics for Biomolecular Interactions
14:30 - 15:00	Liu Liu	A bi-fidelity method in velocity discretization for the Boltzmann equation
15:00 - 15:30	Yue Xie	Stochastic First-Order Methods with Non-smooth and Non-Euclidean Proximal Terms for Nonconvex High-Dimensional Stochastic Optimization
15:30 - 16:00	Zhongjian Wang	Neural Monge map estimation with convergence guarantee

July 1, HSSH401	Speaker	CT1: Advances in Numerical Methods for Structured Models and Energy-Stable Systems
14:00 - 14:25	Leung Ka Lun	A Finite Volume Method for Conservation Laws with Spherical-valued Functions
14:25 - 14:50	Wang Hongqiao	Conditional density estimation accelerated Bayesian optimal experimental design
14:50 - 15:15	Jaemin Shin	High-order energy stable schemes for gradient flows
15:15 - 15:40	Seunggyu Lee	Shaping decision boundaries: Phase-field approach with efficient but energy-stable numerical scheme

## Day 1, Parallel Session 1B, 16:30 - 18:30/18:35

July 1, YH501	Speaker	MS1B: Quantifying Uncertainty in Scientific Computing and Its Applications
16:30 - 17:00	Wang Hongqiao	Conditional density estimation accelerated Bayesian optimal experimental design
17:00 - 17:30	Yuming Ba	A variable-separation method with the frequency domain for parametric time-dependent Maxwell's equations
17:30 - 18:00	Rukang You	Frequency-adaptive Multi-scale Deep Neural Networks
18:00 - 18:30	Congzhuo Fang	Stochastic multi-scale strain gradient fracture method for the brittle materials with random micro-cracks

July 1, YH502	Speaker	MS4B: Structured Matrix Computations and Related Applications
16:30 - 17:00	Chien-Chang Yen	Numerical Calculation of Potentials and Forces for Infinite Domains with Boundary Conditions
17:00 - 17:30	Tsung-Ming Huang	Numerical Solutions for Stochastic Continuous-time Algebraic Riccati Equations
17:30 - 18:00	Shu-Yung Liu	Spherical Volume-Preserving Parameterization via Energy Minimization

July 1, YH503	Speaker	MS8B: Mathematical Biology and Ecology
16:30 - 17:00	Je-Chiang Tsai	Noise-Induced Bimodality in Self-Regulated Gene Networks with Nonlinear Promoter Transitions and Fast Dimerization
17:00 - 17:30	Noel Fortun	Understanding Nonlinear Models Through Power-Law Kinetic Analysis
17:30 - 18:00	Piolo Gaspar	A reaction network approach to modeling afforestation/reforestation as carbon dioxide removal systems
18:00 - 18:30	Marvin Merlin	Combinatorial and Network-Theoretic Modeling of Ecological Systems Using $P$ -Graphs

July 1, YH504	Speaker	CT2: Mathematical and Numerical Analysis for Nonlinear and Coupled Systems
16:30 - 16:55	Wenjun Sun	A $H_N^T$ -based UGKS scheme for the three-temperature radiative transfer equations
16:55 - 17:20	Rani Sulvianuri	A Momentum-Conserving Scheme for Simulating Landslide-Generated Waves in Narrow Bays
17:20 - 17:45	Jiabao Yang	Convergence analysis of the 9th Chebyshev Method for Nonconvex Nonsmooth Optimization Problems
17:45 - 18:10	Guoxi Ni	Study on the GRP Scheme for the Compressible Fluids with Geometrical Symmetry
18:10 - 18:35	Kin Shing Chan	Two-phase micropolar fluids: Phase field models and their analysis

July 1, YH505	Speaker	CT3: Computational Methods and Algebraic Techniques in Kinematics and Discrete Structures
16:30 - 16:55	Alma Sandoval	Dual Quaternion Analogues of Polynomials for the Inverse Kinematics of 6-joint Serial Manipulators
16:55 - 17:20	Llorena Asuncion	Solving the Inverse Kinematics of P6R Special Manipulators
17:20 - 17:45	Saraleen Mae Manongsong	Transforming Hyperplanes for the Kinematic Dyads Using Dual Quaternion Algebra
17:45 - 18:10	Alfonso Santos	Characterization of Rings Vertex Covering in Graphs

## Day 1, Poster Session, 18:30 - 19:30

<b>July 1, HSSH 4F</b>	<b>Speaker</b>	<b>PS: Poster Session</b>
18:30 - 19:30	Minhwan Ji	Efficient and Energy-Stable Linear Convex Splitting Method for the Parabolic Sine-Gordon Equation
18:30 - 19:30	Jaewon Lee	Feature point matching and panorama creation based on SIFT algorithm
18:30 - 19:30	Lara Gabrielle Lim	Stock Market Analysis Using Persistent Homology
18:30 - 19:30	Junyoung Park	Efficient Triplet Loss Training via Class Incremental Learning for Face Recognition
18:30 - 19:30	Jeffrey Imer Salim	Prey-Predator Model of Ice-Ice Disease in Seaweeds
18:30 - 19:30	Alvin Sevilla	Comparative Analysis of Kinetic Realizations of Epidemiological Compartmental Models of HIV/AIDS Transmission
18:30 - 19:30	Tung-Che Wu	Orthogonal Polynomial Feature Extraction for Green Coffee Bean Origin Classification
18:30 - 19:30	Chaeun Yoo	Dewarping Camera-Scanned Documents Using a Regular Reference Point-Based Approach
18:30 - 19:30	Zihao Yang	An efficient peridynamics-based statistical multiscale method for fracture in composite structures

## Day 2, Parallel Session 2A, 10:00 - 12:00/12:05

<b>July 2, YH501</b>	<b>Speaker</b>	<b>MS3A: Recent Advances in Reliable Numerical Computations and Applications</b>
10:00 - 10:30	Hisashi Okamoto	Potential applications of interval arithmetic to certain dynamical systems
10:30 - 11:00	Tomoyuki Miyaji	Another computer-assisted proof of unimodal solutions of the Proudman–Johnson equation
11:00 - 11:30	Ryoki Endo	Computer-assisted proof of the simplicity of the second Laplacian eigenvalue for non-equilateral triangles
11:30 - 12:00	Takeshi Terao	Acceleration of iterative refinement for symmetric eigenvalue decomposition

<b>July 2, YH502</b>	<b>Speaker</b>	<b>MS5A: Mathematical Models, Computational Methods and Applications in Quantum Mechanics</b>
10:00 - 10:30	Qinglin Tang	A linearly implicit and energy conservative method for the logarithmic Klein–Gordon equation
10:30 - 11:00	Yifei Li	An energy-stable numerical approximation for the Willmore flow
11:00 - 11:30	Yue Feng	Explicit symmetric low-regularity integrator for the nonlinear Schrödinger equation
11:30 - 12:00	Yong Zhang	Fast computation of convolution potentials and Linear Response Problems

<b>July 2, YH503</b>	<b>Speaker</b>	<b>MS6A: Deep Learning Method in Scientific Computing</b>
10:00 - 10:30	Qiaolin He	A novel number-theoretic sampling neural network for solving partial differential equations
10:30 - 11:00	Zhao Ding	Make Diffusion Models Faster: One Step Characteristic Generator by Distillation Techniques
11:00 - 11:30	Uyen Lieu*	Reinforcement Learning Approach for Quasicrystalline Self-Assembly

<b>July 2, YH504</b>	<b>Speaker</b>	<b>MS7A: Recent Advances in PDE-Constrained Optimization and Optimal Controls</b>
10:00 - 10:30	Wei Gong	Analysis and Approximation to Parabolic Optimal Control Problems with Measure-Valued Controls in Time
10:30 - 11:00	Gilbert Peralta	Mixed and Hybrid Methods for Optimal Control of the Wave Equation
11:00 - 11:30	Weiwei Hu	Feedback Control Design for Mixing in Incompressible Flows
11:30 - 12:00	John Sebastian Simon	Analysis of Unregularized Optimal Control Problems Constrained by the 2d Boussinesq System

<b>July 2, YH505</b>	<b>Speaker</b>	<b>MS9A: Bridging Physics and Learning: Recent Advances in Scientific Machine Learning</b>
10:00 - 10:30	Xiaoli Chen	Data driven discovery of escape phenomena in stochastic systems
10:30 - 11:00	Jinchao Feng	Data-driven discovery of interacting particle systems with uncertainty quantification
11:00 - 11:30	Yuancheng Zhou	DeepSPoC: a deep learning based sequential propagation of chaos
11:30 - 12:00	Yue Qiu	Sparse discovery of differential equations based on multi-fidelity gaussian process

<b>July 2, HSSH401</b>	<b>Speaker</b>	<b>SPP: Student Paper Presentations</b>
10:00 - 10:20	Kengo Suzuki	An integer arithmetic-based AMG-preconditioned FGMRES solver
10:20 - 10:40	Chenguang Duan	Semi-Supervised Deep Sobolev Regression: Estimation and Variable Selection by ReQU Neural Networks
10:40 - 11:00	Chushan Wang	An explicit and symmetric exponential wave integrator for non-linear Schrödinger equations with low regularity

## Day 2, Parallel Session 2B, 14:00 - 16:00/16:05

July 2, YH501	Speaker	MS3B: Recent Advances in Reliable Numerical Computations and Applications
14:00 - 14:30	Yuki Uchino	Fast Generation of Real-Symmetric Matrices and their Exact Eigenpairs
14:30 - 15:00	Katsuhisa Ozaki	Two GEMM-based emulation methods for matrix multiplication
15:00 - 15:30	Takuma Kimura	Constructive error estimates for a full-discretized periodic solution of linear parabolic equations
15:30 - 16:00	Kenta Kobayashi	Error estimation for finite element solutions on meshes that contain thin elements

July 2, YH502	Speaker	MS5B: Mathematical Models, Computational Methods and Applications in Quantum Mechanics
14:00 - 14:30	Yongyong Cai	Numerical methods and analysis for oscillatory dispersive PDEs
14:30 - 15:00	Chushan Wang	Numerical methods for the nonlinear Schrödinger equation with low regularity potential and nonlinearity
15:00 - 15:30	Wei Jiang	Parametric finite element methods for solving geometric flows
15:30 - 16:00	Chunmei Su	Low regularity time integrators for the “good” Boussinesq equation with rough solutions

July 2, YH503	Speaker	MS6B: Deep Learning Method in Scientific Computing
14:00 - 14:30	Cheng Yuan	Score-Based Sequential Langevin Sampling for Data Assimilation
14:30 - 15:00	Chenguang Duan	Solving Bayesian Inverse Problems via Diffusion-based Sampling
15:00 - 15:30	Shijun Zhang	Tackling High-Frequency Challenges: From Shallow to Multi-Layer Neural Networks

July 2, YH504	Speaker	MS7B: Recent Advances in PDE-Constrained Optimization and Optimal Controls
14:00 - 14:30	Julius Fergy Rabago	Inverse geometric reconstruction of subdermal burn regions from thermal data
14:30 - 15:00	Hirromichi Itou	On inverse and forward problems in some viscoelastic materials
15:00 - 15:30	Manabu Machida	Inverse diffusion problem and diffuse optical tomography

July 2, YH505	Speaker	MS9B: Bridging Physics and Learning: Recent Advances in Scientific Machine Learning
14:00 - 14:30	Xinliang Liu	Integral representations of Barron and Sobolev spaces via $\text{ReLU}^k$ activation function and applications
14:30 - 15:00	Jiamin Jiang	Multiscale GNN-based neural solvers for complex flow problems
15:00 - 15:30	Yunwen Yin	Physics-aware deep learning framework for the limited aperture inverse obstacle scattering problem
15:30 - 16:00	Lei Ma	UQ-SONet: Deep set based operator learning with uncertainty quantification

## Day 3, Parallel Session 3, 08:45 - 10:00

July 3, YH501	Speaker	CT4: Mathematical and Computational Approaches to Modeling, Data, and Optimization in Complex Systems
08:45 - 09:10	Samuel John Parreño	A Persistent Homology Approach to Early Warning Signals in Philippine Epidemiological Data
09:10 - 09:35	John Paul Guzman	Modeling Multilingual Aspect-Based Sentiment Classification with Limited Data

July 3, YH502	Speaker	CT5: Numerical Analysis and Error Bounds in Differential Equations and Matrix Functions
08:45 - 09:10	Shinya Uchiumi	Guaranteed bounds for the eigenvalues of Laplacian in planar curved domains
09:10 - 09:35	Shinya Miyajima	Perturbation bounds for the matrix Mittag-Leffler function

July 3, YH503	Speaker	CT6: Nonlinear Dynamics and Free Boundary Problems in Biological and Physical Systems
08:45 - 09:10	Mohd Almie Bin Alias	A metabolic-consumer-resource model with a moving tumour boundary
09:10 - 09:35	Meng Zhao	Dynamics of Hele-Shaw flow in Multi-connected Regions
09:35 - 10:00	Shin-Hwa Wang	Structures and evolution of bifurcation diagrams of a $p$ -Laplacian generalized logistic problem with nonconstant yield harvesting

July 3, YH504	Speaker	CT7: Mathematical Frontiers in Geometry, Materials, and Stochastic Systems
08:45 - 09:10	Yu-Lin Chang	Mean Inequalities Associated with Circular Cones
09:10 - 09:35	Congzhuo Fang	A Multiscale Fracture Framework for Stochastic Microcrack-Embedded Brittle Materials: Modeling and Uncertainty Quantification
09:35 - 10:00	Hassairi Imen	Reflected BSDEs with Discontinuous Noise: Mathematical Tools for AI and Industrial Systems