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Schedule

<table>
<tr><th>Time</th><th>June 30</th><th>July 1</th><th>July 2</th><th>July 3</th><th>July 4</th></tr>
<tr><td>08:00 - 08:30</td><td rowspan="8"></td><td>Registration</td><td></td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>08:30 - 08:45</td><td rowspan="2">Opening</td><td rowspan="3">George Karniadakis
Plenary Talk 2</td></tr>
<tr><td>08:45 - 09:00</td><td rowspan="3">Parallel Session 3
[CT5] [CT6] [CT7]</td><td rowspan="8">Satellite Meetings</td></tr>
<tr><td>09:00 - 09:30</td><td rowspan="2">Tang Tao
Plenary Talk 1</td></tr>
<tr><td>09:30 - 10:00</td><td>Coffee Break</td></tr>
<tr><td>10:00 - 10:30</td><td>Coffee Break</td><td rowspan="4">Parallel Session 2A
[MS5A] [MS6A] [MS7A] [MS9A] [SPP] [CT3]</td><td>Coffee Break</td></tr>
<tr><td>10:30 - 11:10</td><td>Zhiwen Zhang
Invited Talk 1A</td><td>Yuling Jiao
Invited Talk 3A</td></tr>
<tr><td>11:10 - 11:50</td><td>Qianxiao Li
Invited Talk 1B</td><td>Renier Mendoza
Invited Talk 3B</td></tr>
<tr><td>11:50 - 12:00</td><td rowspan="2">First Group Photo
& Lunch Break</td><td rowspan="2">Closing</td></tr>
<tr><td>12:00 - 14:00</td><td>Lunch Break</td></tr>
<tr><td>14:00 - 16:00</td><td rowspan="3">Registration</td><td>Parallel Session 1A
[MS1A] [MS2] [MS3A] [MS4A] [MS8A] [CT1]</td><td>Parallel Session 2B
[MS5B] [MS6B] [MS7B] [MS9B] [CT4]</td><td rowspan="6"></td><td rowspan="6"></td></tr>
<tr><td>16:00 - 16:30</td><td>Coffee Break</td><td>Coffee Break</td></tr>
<tr><td>16:30 - 17:10</td><td rowspan="3">Parallel Session 1B
[MS1B] [MS3B] [MS4B] [MS8B] [CT2]</td><td>Jae-Hun Jung
Invited Talk 2A</td></tr>
<tr><td>17:10 - 17:50</td><td rowspan="2"></td><td>Takeshi Ogita
Invited Talk 2B</td></tr>
<tr><td>17:50 - 18:30</td><td>Second Group Photo
& Travel to Banquet Venue</td></tr>
<tr><td>18:30 - 19:30</td><td>Poster Session
with cocktails and drinks</td><td rowspan="2">Banquet</td></tr>
<tr><td>19:30 - 21:00</td><td></td></tr>
</table>

SPP: A Student Paper Prize session · CT: A Contributed Talk session

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 · B	Noel Fortun · Angelyn Lao
MS9	Bridging Physics and Learning: Recent Advances in Scientific Machine Learning A · B	Ling Guo · Liang Yan

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

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

July 1	**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	**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	**Speaker**	**MS3A: Recent Advances in Reliable Numerical Computations and Applications**
14:00 - 14:30	Hisashi Okamoto	Potential applications of interval arithmetic to certain dynamical systems
14:30 - 15:00	Tomoyuki Miyaji	Another computer-assisted proof of unimodal solutions of the Proudman–Johnson equation
15:00 - 15:30	Ryoki Endo	Computer-assisted proof of the simplicity of the second Laplacian eigenvalue for non-equilateral triangles
15:30 - 16:00	Takeshi Terao	Acceleration of iterative refinement for symmetric eigenvalue decomposition

July 1	**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	**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 Multiregional 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

July 1	**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	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	Speaker	MS3B: Recent Advances in Reliable Numerical Computations and Applications
16:30 - 17:00	Yuki Uchino	Fast Generation of Real-Symmetric Matrices and their Exact Eigenpairs
17:00 - 17:30	Katsuhisa Ozaki	Two GEMM-based emulation methods for matrix multiplication
17:30 - 18:00	Takuma Kimura	Constructive error estimates for a full-discretized periodic solution of linear parabolic equations
18:00 - 18:30	Kenta Kobayashi	Error estimation for finite element solutions on meshes that contain thin elements

July 1	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
18:00 - 18:30	Shu-Min Tan	Orthogonal Polynomial Feature Extraction for Green Coffee Bean Origin Classification

July 1	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	Speaker	CT2: Numerical Analysis and Algorithms 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

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

July 1	**Speaker**	**PS: Poster Session**
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	Mary Joy Togonon	Dynamics of Particles in Systems with Multiple Attractors: A Langevin Approach
18:30 - 19:30	Tung-Che Wu	Orthogonal Polynomial Feature Extraction for Green Coffee Bean Origin Classification
18:30 - 19:30	Chaeeun 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

July 2	**Speaker**	**MS5A: Mathematical Models, Computational Methods and Applications in Quantum Mechanics**
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

July 2	**Speaker**	**MS6A: Deep Learning Method in Scientific Computing**
10:00 - 10:30	Haojiong Shangguan	A hybrid FEM-PINNs method for time-dependent partial differential equations
10:30 - 11:00	Qiaolin He	A novel number-theoretic sampling neural network for solving partial differential equations
11:00 - 11:30	Zhao Ding	Make Diffusion Models Faster: One Step Characteristic Generator by Distillation Techniques
11:30 - 12:00	Uyen Lieu*	Reinforcement Learning Approach for Quasicrystalline Self-Assembly

July 2	**Speaker**	**MS7A: Recent Advances in PDE-Constrained Optimization and Optimal Controls**
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	Zhiyu Tan	A New Finite Element Method for Elliptic Optimal Control Problems with Pointwise State Constraints in Energy Spaces
11:30 - 12:00	John Sebastian Simon	Analysis of Unregularized Optimal Control Problems Constrained by the 2d Boussinesq System

July 2	**Speaker**	**MS9A: Bridging Physics and Learning: Recent Advances in Scientific Machine Learning**
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

July 2	**Speaker**	**SPP: Student Paper Presentations**
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 nonlinear Schrödinger equations with low regularity

July 2	**Speaker**	**CT3: Computational Methods and Algebraic Techniques in Kinematics and Discrete Structures**
10:00 - 10:25	Alma Sandoval	Dual Quaternion Analogues of Polynomials for the Inverse Kinematics of 6-joint Serial Manipulators
10:25 - 10:50	Llorena Asuncion	Solving the Inverse Kinematics of P6R Special Manipulators
10:50 - 11:15	Saraleen Mae Manongsong	Transforming Hyperplanes for the Kinematic Dyads Using Dual Quaternion Algebra
11:15 - 11:40	Alfonso Santos	Characterization of Rings Vertex Covering in Graphs

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

July 2	**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	**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	**Speaker**	**MS7B: Recent Advances in PDE-Constrained Optimization and Optimal Controls**
14:00 - 14:30	Weiwei Hu	Feedback Control Design for Mixing in Incompressible Flows
14:30 - 15:00	Hiromichi Itou	On inverse and forward problems in some viscoelastic materials
15:00 - 15:30	Manabu Machida	Inverse diffusion problem and diffuse optical tomography
15:30 - 16:00	Julius Fergy Rabago	Inverse geometric reconstruction of subdermal burn regions from thermal data

July 2	**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 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

July 2	**Speaker**	**CT4: Mathematical and Computational Approaches to Modeling, Data, and Optimization in Complex Systems**
14:00 - 14:25	Congzhuo Fang	A Multiscale Fracture Framework for Stochastic Microcrack-Embedded Brittle Materials: Modeling and Uncertainty Quantification
14:25 - 14:50	Yu-Lin Chang	Mean Inequalities Associated with Circular Cones
14:50 - 15:15	Samuel John Parreño	A Persistent Homology Approach to Early Warning Signals in Philippine Epidemiological Data
15:15 - 15:40	John Paul Guzman	Modeling Multilingual Aspect-Based Sentiment Classification with Limited Data
15:40 - 16:05	Rachelle Anne Guanga	Electric Vehicle Charging Station Locations Optimization

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

July 3	**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	**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	**Speaker**	**CT7: Mathematical and Numerical Methods for Modeling Physical and Biological Systems**
08:45 - 09:10	Hassairi Imen	Reflected BSDEs with Discontinuous Noise: Mathematical Tools for AI and Industrial Systems