Summer School in conjunction with SciCADE
(08 to 12 Jul 2024)

Venue
Block S16
6 Science Drive 2
#03-07
Singapore 117546

ORGANIZING COMMITTEE

Weizhu Bao
National University of Singapore

TUTORIAL SPEAKERS

Elena Celledoni
Norwegian University of Science and Technology

Qiang Du
Columbia University

Shi Jin
Shanghai Jiao Tong University

Alexander Ostermann
University of Innsbruck

In conjunction with SciCADE 2024, a Summer School on "Scientific Computation and Differential Equations'' will be held at the Institute for Mathematical Sciences (IMS) at the National University of Singapore, Singapore during 8–12 July 2024. During the Summer School, four distinguished researchers will give tutorial lectures (4 hours each) on topics related to Scientific Computation and Differential Equations.

For more information: https://ims.nus.edu.sg/events/ssscicade2024/

Monday, 8 July 2024	
Time	**Title** **Speaker**
0900–0925	Registration
0925–0930	Welcome Address Weizhu Bao *National University of Singapore, Singapore*
0930–1030	Quantum Computation of partial differential equations and related problems (Part I) Shi Jin *Shanghai Jiao Tong University, China*
1030–1100	Coffee Break
1100–1200	Quantum Computation of partial differential equations and related problems (Part II) Shi Jin *Shanghai Jiao Tong University, China*
1200–1400	*Lunch Break*
1400–1500	Deep learning from the point of view of numerical analysis Lecture 1: introduction, deep learning as optimal control, dynamical systems and deep neural networks. Equivariant neural networks Elena Celledoni *Norwegian University of Science and Technology, Norway*
1500–1530	Coffee Break
1530–1630	Deep learning from the point of view of numerical analysis Lecture 2: Adversarial attacks, stability of ODEs and applications to 1-Lipschitz networks and converging "Plug-and-Play" algorithms for imaging. B-stability on manifolds and applications. Elena Celledoni *Norwegian University of Science and Technology, Norway*

Tuesday, 9 July 2024	
Time	**Title** **Speaker**
0915–0930	Registration
0930–1030	Quantum Computation of partial differential equations and related problems (Part III) Shi Jin *Shanghai Jiao Tong University, China*
1030–1100	Coffee Break

Tuesday, 9 July 2024	
Time	**Title** **Speaker**
1100–1200	Quantum Computation of partial differential equations and related problems (Part IV) Shi Jin *Shanghai Jiao Tong University, China*
1200–1400	*Lunch Break*
1400–1500	Deep learning from the point of view of numerical analysis Lecture 3: Deep learning of diffeomorphisms for optimal shape reparametrization. Applications of deep learning to mechanical systems. Elena Celledoni *Norwegian University of Science and Technology, Norway*
1500–1530	Coffee Break
1530–1630	Deep learning from the point of view of numerical analysis Lecture 4: Learning Hamiltonians on manifolds, from noisy data and learning PDEs form pixel data. Elena Celledoni *Norwegian University of Science and Technology, Norway*

Wednesday, 10 July 2024	
Time	**Title** **Speaker**
0915–0930	Registration
0930–1030	Time integration strategies for PDEs Lecture 1: Exponential integrators: basics and limits Alexander Ostermann *University of Innsbruck, Austria*
1030–1100	Coffee Break
1100–1200	Time integration strategies for PDEs Lecture 2: Accelerating exponential integrators Alexander Ostermann *University of Innsbruck, Austria*
1200	*Group Photo & Lunch Reception* *(Sponsored by Institute for Mathematical Sciences)*

Thursday, 11 July 2024	
Time	**Title** **Speaker**
0915–0930	Registration
0930–1030	Time integration strategies for PDEs Lecture 3: Splitting methods: basics, limits, applications Alexander Ostermann *University of Innsbruck, Austria*
1030–1100	Coffee Break
1100–1200	Time integration strategies for PDEs Lecture 4: Low regularity integration Alexander Ostermann *University of Innsbruck, Austria*
1200–1400	*Lunch Break*
1400–1500	Nonlocal modeling, analysis and computation (Part I) Qiang Du *Columbia University, USA*
1500–1530	Coffee Break
1530–1630	Nonlocal modeling, analysis and computation (Part II) Qiang Du *Columbia University, USA*

Friday, 12 July 2024	
Time	**Title** **Speaker**
0915–0930	Registration
0930–1030	Nonlocal modeling, analysis and computation (Part III) Qiang Du *Columbia University, USA*
1030–1100	Coffee Break
1100–1200	Nonlocal modeling, analysis and computation (Part IV) Qiang Du *Columbia University, USA*
1200–1205	Closing Remark

This schedule is accurate as of 10 Jul 24 and is subjected to changes.