

Third Pacific Rim Conference on Mathematics

Plenary and Invited Speakers

1. Algebra and Combinatorics 1+5

- Organizer** Genghua Fan, Fuzhou University, P. R. China
- Plenary Speaker:** Gerard Jennhwa Chang, National Taiwan University, Taiwan
Title: Vogan diagrams and the classification of real simple Lie algebras
- Invited Speaker:** Cai Heng Li, Ohio State University, USA
Title: Factorisations of Almost Simple Groups
- Ko-Wei Lih, Institute of Mathematics Academia Sinica, Taiwan
Title: On an Interpolation Property of Graphs
- Akira Saito, Nihon University, Japan
Title: Forbidden Subgraphs and Matchings in Graphs
- Jia-Yu Shao, Tongji University, P. R. China
Title: The determinantal regions of complex sign pattern matrices and ray pattern matrices
- Wenan Zang, The University of Hong Kong, Hong Kong
Title: Bonds with Parity Constraints

2. Algebraic Aspects of Lie Theory and Geometry 1+6

- Organizer** Shun-Jen Cheng, National Taiwan University, Taiwan
- Plenary Speaker:** Minoru Wakimoto, Kyushu University, Japan
Title: Representation theory of W -algebras via quantum reduction
- Invited Speaker:** Eng Chye Tan, National University of Singapore, Singapore
Title: Toric Deformations of the $GL(n)$ Tensor Product Algebra
- Yucai Su, Shanghai Jiaotong University, P. R. China
Title: Lie bialgebras of generalized Witt type
- Aaron Phillips, University of Virginia, USA
Title: What's so great about the affine Hecke algebra?
- Ruibin Zhang, University of Sydney, Australia
Title: Quantum Supergroups and Knot Invariants
- Jae-Hoon Kwon, University of Seoul, Korea
Title: Crystal graphs for Lie superalgebras and Cauchy identity
- Eugene Xia, National Cheng-Kung University, Taiwan
Title: Dynamics of the mapping class group action on moduli spaces

3. Applied Differential Geometry 1+6

- Organizer** Philippe G. Ciarlet, City University of Hong Kong, Hong Kong
- Plenary Speaker:** Philippe G. Ciarlet, City University of Hong Kong, Hong Kong
Title: A surface viewed as a function of its two fundamental forms

**Invited
Speaker:**

[Robert Jerrard](#), University of Toronto, Canada.

Title: [Refined Jacobian estimates and vortex dynamics for the Gross-Pitaevsky equation](#)

[Liliana Gratie](#), City University of Hong Kong, Hong Kong

Title: [Intorinsic linear shell equations](#)

[Sheng Zhang](#), Wayne State University, Detroit, USA.

Title: [Mathematical modeling of elastic arches and shape finding of stiff arches](#)

[Tomohiro Yanao](#), Nagoya University, Japan.

Title: [Geometric Effects in Structural Isomerization Dynamics of Atomic Clusters](#)

[Pascal Frey](#), University Pierre et Marie Curie, Paris, France.

Title: [Anisotropic Delaunay mesh adaptation for numerical simulations](#)

[Crisitinel Mardare](#), University Pierre et Marie Curie, Paris, France.

Title: [Continuity of an immersion in \$H^1\$ as a function of its metric tensor in \$L^1\$](#)

4. Asymptotics and Riemann-Hilbert Problems $\diamond 1+6 \diamond$

Organizer \diamond

[Roderick Wong](#), City University of Hong Kong, Hong Kong

**Plenary
Speaker:**

[Roderick Wong](#), City University of Hong Kong, Hong Kong

Title: [A Panoramic View of Asymptotics](#)

**Invited
Speaker:**

[Walter van Assche](#) \diamond Katholieke Universiteit Leuven, Belgium

Title: [Quadratic Hermite--Padé approximation to the exponential function: a Riemann--Hilbert approach](#)

[Pavel Bleher](#), Indiana University Purdue University Indianapolis, USA

Title: [The large \$N\$ limit in random matrix models: the Riemann-Hilbert approach](#)

[Adri Olde Daalhuis](#), University of Edinburgh, UK

Title: [Exponential asymptotics for nonlinear ODEs and PDEs: part I](#)

[Christopher Howls](#), University of Southampton, UK

Title: [Exponential asymptotics for nonlinear ODEs and PDEs: part II](#)

[Arno Kuijlaars](#), Katholieke Universiteit Leuven, Belgium

Title: [Riemann-Hilbert methods in random matrix theory](#)

[Yu-Qiu ZHAO](#), Zhongshan University, China

Title: [On a Uniform Treatment of Darboux's Method](#)

5. Computational Approach to Complex Dynamical Systems $\diamond 1+6 \diamond$

Organizer \diamond

[Yasumasa Nishiura](#), Hokkaido University, Japan

**Plenary
Speaker:**

[Konstantin Mischaikow](#), Georgia Institute of Technology, USA

Title: [Computational Homology in Nonlinear Dynamics](#)

**Invited
Speaker:**

[Bill Kalies](#), Florida Atlantic University, USA

Title: [An algorithmic Approach to Chain Recurrence](#)

[Sarah Day](#), Cornell University, USA

Title: [A topological approach for computational studies of infinite-dimensional maps](#)

[Thomas Wanner](#), George Mason University, USA

Title: [Computational Approaches to Phase Separation Dynamics](#)

Takashi Teramoto, Chitose Institute of Science and Technology, Japan

Title: Morphological Characterization of Diblock Copolymer Problem

Makoto Iima, Hokkaido University, Japan

Title: Collision of counter-propagating localized convection cells in binary fluid mixture

Yasumasa Nishiura, Hokkaido University, Japan

Title: Scattering among particle-like patterns in dissipative systems

6. Kinetic Theory 1+6

Organizer Tai-Ping Liu, Stanford University, USA

Plenary Speaker: Shih-Hsien Yu, City University of Hong Kong, Hong Kong

Title: From positive solution of Boltzman shock layer to wave-particle duality in Boltzmann equation for the construction of Green's function

Invited Speaker: Eric A. Carlen, Georgia Institute of Technology, USA

Title: Entropy and Chaos in the Kac Model

Seung-Yeal Ha, Seoul National University, Korea

Title: Initial-boundary value problem for the Boltzmann equation near vacuum

Fraydoun Rezakhanlou, UC Berkeley, USA

Title: Coagulation-Fragmentation Processes and Smoluchowski's Equation

Hiroshi Sugimoto, Kyoto University, Japan

Title: Rarefied gas flows induced by temperature fields and their applications

Tong Yang, City University of Hong Kong, Hong Kong

Title: Boltzmann equation with external force and vlasov-Poisson-Boltzmann system in infinite vacuum

Chiun-Chuan Chen, National Taiwan University, Taiwan

Title: Thermal Creep Flow for Linearized Boltzmann Equation

7. Low Dimensional Topology and Geometry 1+6

Organizer Gaven Martin, University of Auckland, New Zealand

Plenary Speaker: Shicheng Wang Peking University, P. R. China

Title: Solenoids in dynamics and in topology

Invited Speaker: Jie Wu, National Univ. of Singapore, Singapore

Title: From braid groups to homotopy groups

Jonathan Hillman, University of Sydney, Australia

Title: \mathbb{P}^1 -complexes with strongly minimal models

Gaven Martin, Massey University, New Zealand

Title: Quasiregular self mappings of hyperbolic manifolds and the generalised Lichnerowicz Conjecture

Hitoshi Murakami, Tokyo Institute of Technology, Japan

Title: Asymptotic behaviors of the colored Jones polynomials

Kee Yuen Lam, UBC, Canada

Title: Orderable groups and 3-manifolds

Gyo Taek Jin, KAIST, Korea

Title: Marginal knots and strongly marginal knots

8. Nonlinear Analysis—Nonlinear Phenomena, Symmetry and Integrable Structures 1+5

Organizer Colin Rogers, University of New South Wales, Australia

Plenary Speaker: Colin Rogers, University of New South Wales, Australia

Title: Hidden Integrability in Gasdynamics Tzitzeica Vortex Streets and their Reciprocals

Invited Speaker: Kenji Kajiwara, Kyushu University, JAPAN

Title: Symmetries and Hypergeometric Solutions for the Discrete Painlevé Equations

Decio Levi, University of Rome, ITALY

Title: Multiscale Analysis of Discrete Nonlinear Equations

Wolfgang Schief, University of New South Wales, Australia

Title: Integrable discrete differential geometry of 'plated' membranes in equilibrium

Peter Vassiliou, University of Canberra, Australia

Title: Contact, Control, Integrable Systems

Liqun Qi, Hong Kong Polytechnic University Hong Kong

Title: Eigenvalues of Tensors and Their Applications

9. Partial Differential Equations and Applications 1+7

Organizer Jiaxing Hong, Fudan University, P. R. China

Plenary Speaker: Shuxing Chen, Fudan University, P. R. China

Title: Multidimensional Shock Theory

Invited Speaker: Qing Han, University of Notre Dame, USA

Title: Local Isometric Embedding of Surfaces in \mathbb{R}^3

Bo Guan, Ohio State University, USA

Title: Some fully nonlinear elliptic equations from geometric problems

Xingbin Pan, East China Normal University, P. R. China

Title: On a Problem Related to Vortex Nucleation in 3-Dimensional Superconductors

Daomin Cao, Chinese Academy of Sciences, P. R. China

Title: Multiscale-bump standing waves with a critical frequency for nonlinear Schrödinger equations

Ping Zhang, Chinese Academy of Sciences, P. R. China

Title: On the global wellposedness to the 3-D incompressible anisotropic Navier-Stokes equations

Gen Nakamura, Hokkaido University Japan

Title: Reconstruction of inclusions for the inverse boundary value problem for non-stationary heat equation

Minchun Hong, Australian National University, Australia

Title: Infinitely many equilibrium configurations of the liquid crystal system