Workshop One: Old and New Challenges in Fluid Equations: Regularity, Singularity and Stability

(16–20 December 2024)

ORGANIZING COMMITTEE

<u>Co-chairs</u>

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Venue

IMS Executive Seminar Room
Bock S17, Level 3
10 Lower Kent Ridge Rd Singapore 119076

For more information: https://ims.nus.edu.sg/events/singularities-in-fluids-and-general-relativity/

Singularities in Fluids and General Relativity

Workshop One: Old and New Challenges in Fluid Equations: Regularity, Singularity and Stability

(16–20 December 2024)

Monday, 16 Dec 2024

Time	Title	Speaker
0900–0930	Registration	
0930–1020	On the Prandtl's Boundary Layer Theory for Steady Sink-Type Flows	Zhouping Xin *The Chinese University of Hong Kong, Hong Kong SAR*
1020–1110	Local Rigidity of the Couette Flow for the Stationary Triple-deck Equations	Yasunori Maekawa *Kyoto University, Japan*
1110–1140	Tea Break	
1140–1230	On the Rate of Vortex Stretching for Axisymmetric Euler Flows Without Swirl	In-Jee Jeong *Seoul National University, S. Korea*
1230–1400	Lunch Break	
1400–1450	Kinetic Shock Profiles for the Landau Equation	Dallas Albritton *University of Wisconsin–Madison, USA*
1450–1540	Non Local Conservation Laws with BV Kernel	Gianluca Crippa *University of Basel, Switzerland*
1540–1610	Tea Break	
1610–1700	Flexibility of Two-Dimensional Euler Flows	Maria Colombo *École Polytechnique Fédérale de Lausanne, Switzerland*

Tuesday, 17 Dec 2024

Time	Title	Speaker
0915–0930	Registration	
0930–1020	Stability of Small BV Solutions to Compressible Euler in a Class of Vanishing Physical Viscosity Limits	Moon-Jin Kang *KAIST, S.Korea*
1020–1110	Long Time Behaviour of Open Fluid Systems	Eduard Feireisl *Institute of Mathematics CAS, Czech Republic*
1110–1140	Group Photo & Tea Break	
1140–1230	Free Boundary Dynamics of an Elastic Filament in 3D Stokes Flow	Laurel Ohm *University of Wisconsin–Madison, USA*
1230–1400	**Lunch Reception at IMS**	

Tuesday, 17 Dec 2024		
Time	**Title**	**Speaker**
1400–1450	Effectiveness of Littlewood-Paley theory in the Study of Turbulence and Machine Learning	Tsuyoshi Yoneda *Hitotsubashi University, Japan*
1450–1540	Stability of Gravitational Collapse	Matthew Schrecker *University of Bath, UK*
1540–1610	Tea Break	
1610–1700	*Short talks by Junior Researchers*	
	Low Regularity Ill-posedness for Elastic Waves and for MHD system in 3D and 2D	Haoyang Chen *National University of Singapore, Singapore*
	Low-Regularity Local Well-Posedness for the Elastic Wave System	Sifan Yu *National University of Singapore, Singapore*

Wednesday, 18 Dec 2024		
Time	**Title**	**Speaker**
0915–0930	Registration	
0930–1020	Vacuum Free Boundary Problems in Gas Dynamics	Juhi Jang *University of Southern California, USA*
1020–1110	Potentially Singular Behavior of 3D Incompressible Navier-Stokes Equations	Thomas Hou *California Institute of Technology, USA*
1110–1140	Tea Break	
1140–1230	Finite Time Singularities for Incompressible Fluids	Diego Córdoba *Institute of Mathematical Sciences (ICMAT), Spain*
1230–1350	Lunch Break	
1400	***Social Activity*** **Gardens By the Bay** 1-way transfer is provided from IMS. Entrance to Gardens by the Bay is free. However, to access certain attractions inside (e.g., Cloud Forest, Flower Dome), participants must purchase tickets on their own.	Social Activity: Gardens By the Bay & Dinner Registration (18 December 2024)
1830	**Dinner @ Long Beach Seafood Robertson Quay** Participants are to make their way to the dinner location on their own. Register: https://forms.office.com/r/WANDfkemeg	

Thursday, 19 Dec 2024		
Time	**Title**	**Speaker**
0915–0930	Registration	
0930–1020	Stable Regime Singularity for the Muskat Problem	Andrej Zlatos *University of California, San Diego, USA*
1020–1110	Singularity Formation for IPM with a Smooth Source	Luis Martinez-Zoroa *University of Basel, Switzerland*
1110–1140	Tea Break	
1140–1230	Stability of Stratified Density under Incompressible Flows	Jaemin Park *Yonsei University, S. Korea*
1230–1400	Lunch Break	
1400–1450	Existence of Non Convex V-states	Javier Gomez-Serrano *Brown University, USA*
1450–1540	Stationary Self-similar Profiles for the Two-dimensional Inviscid Boussinesq Equations	Ken Abe *Osaka Metropolitan University, Japan*
1540–1610	Tea Break	
1610–1700	*Short talks by junior researchers*	
	Cusp formation of vortex patches	Min Jun Jo *Duke University, USA*
	Low Mach Number Limit of Non-isentropic Ideal MHD with a Perfectly Conducting Boundary	Junyan Zhang *National University of Singapore, Singapore*

Friday, 20 Dec 2024		
Time	**Title**	**Speaker**
0915–0930	Registration	
0930–1020	Reversal in the Stationary Prandtl Equations	Sameer Iyer *University of California, Davis, USA*
1020–1110	Non-radial Implosion for Compressible Euler, Navier-Stokes and Defocusing NLS in T^d and R^d	Jia Shi *Massachusetts Institute of Technology, USA*
1110–1140	Tea Break	

Friday, 20 Dec 2024		
Time	Title	Speaker
1140–1230	*Short talks by junior researchers*	
	On the Wellposedness of alpha-SQG Equation in a Half-plane	Junha Kim *Ajou University, S.Korea*
	Onsager's conjecture for the SQG equation	Shi Zhuo Looi *California Institute of Technology, USA*

This schedule is accurate as of 10 Dec 2024 and is subjected to changes.