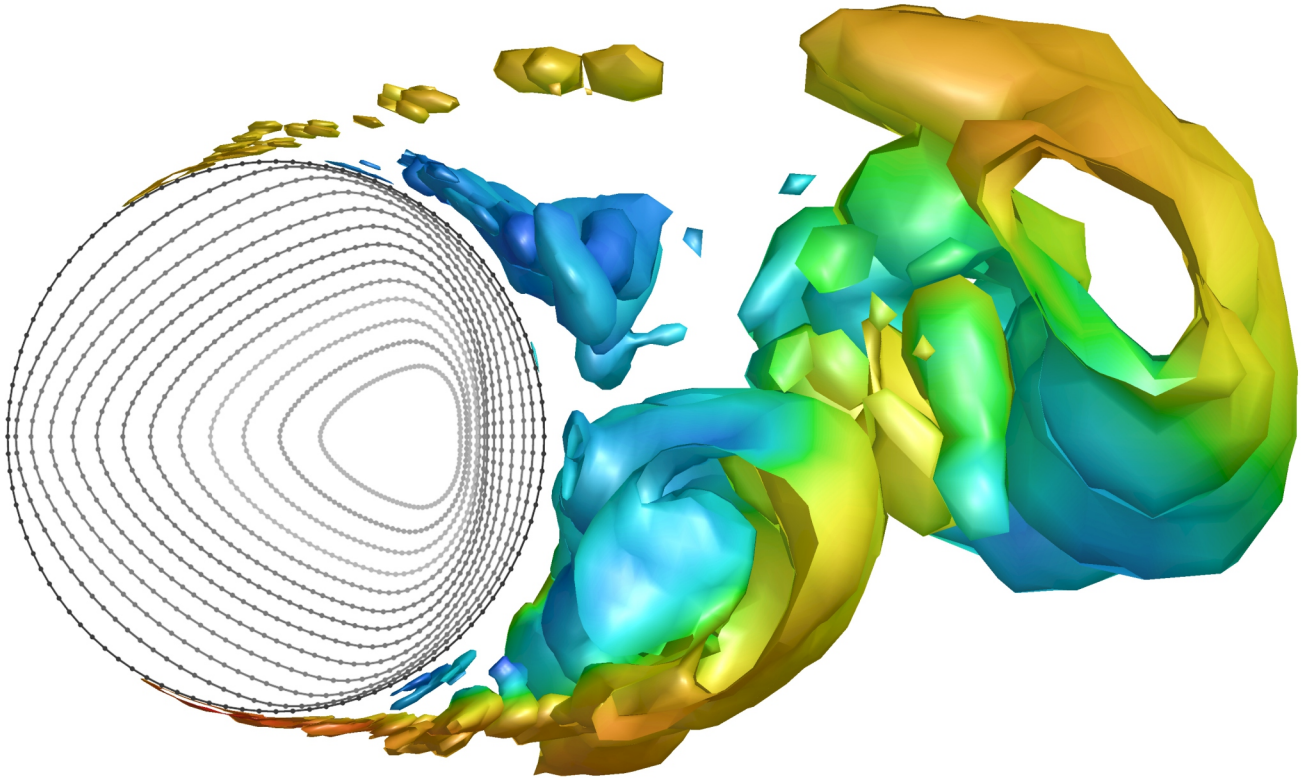
Symposium Information Booklet



IUTAM Symposium on

Recent Advances in Moving Boundary Problems in Mechanics

Christchurch, New Zealand
February 12-15, 2018

UC
UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

www.IUTAM2018.nz

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Welcome to the Symposium

Aims and Scope

Many problems in mechanics involve deformable domains with moving boundaries. Examples include fluid-structure interaction, free surface flows, flows over soft tissues and textiles, flows involving accretion and erosion, flows through deformable porous media, material forming, shape optimization, to name but a few. The interaction of the moving boundary with the participating media leads to fascinating phenomena in a very broad range of contexts such as flutter, wave-breaking, dune formation, ripple formation on the ocean floor, flow instabilities, structure resonance and failure, atherosclerosis, ice formation on aircraft wings.

The presence of a moving boundary presents considerable challenges when it comes to modelling and understanding the underlying system dynamics. The moving boundary often introduces nonlinearities which call for special analytical or numerical treatment. Many techniques have been developed over the years to handle moving boundaries. Examples include front tracking and fixing methods (FFM), the volume of fluid (VOF) method, the arbitrary Lagrangian Eulerian method, immersed boundary concepts, etc. These methods have allowed the community to tackle complex problems of engineering and physics but many challenges still remain.

The aim of this symposium, the second IUTAM Symposium since 1985 in New Zealand, is to gather leading engineers and scientists in applied mechanics, fluid mechanics and engineering science to further develop analytical and computational methods and share their knowledge in moving boundary problems in mechanics.

Presentation of Papers

Each presentation will be 15 minutes, followed by 5 minutes for questions and discussion.

The lecture theatre is equipped with standard audio-visual equipment, including:

- Data projector & screen (16:9)
- Touch screen PC with USB ports
- Electronic mouse/laser pointer
- Laptop input (VGA &HDMI)
- Display port converter for MAC

Conference Venue

Engineering Core
University of Canterbury
42-48 Creyke Rd, Ilam
Christchurch 8041

Scientific Committee

Stefanie Gutschmidt, *NZ* (Co-chair)
Mathieu Sellier, *NZ* (Co-chair)
Jim Denier, *Australia*
J Maciej Floryan, *Canada*
Peter Hagedorn, *Germany*
Oliver Jensen, *United Kingdom*
Timothy Myers, *Spain*
Stephane Popinet, *France*

IUTAM Representative:
Peter Eberhard, *Germany*

Local Organizing Team

Rosalind Archer
Sid Becker
Richard Clarke
Minni Gorthy
Stefanie Gutschmidt
James Hewett
Mark Jermy
Miguel Moyers Gonzalez
Mathieu Sellier
Philip Wilson

Christchurch in New Zealand

New Zealand

New Zealand (Aotearoa) is an uncodified constitutional monarchy with a parliamentary democracy, with Queen Elizabeth II as head of state, represented in-country by the Governor-General. NZ is an island country in the southwestern Pacific Ocean and consisting of two main landmasses: the North and the South Islands which are separated by Cook Strait. In addition, there are approximately 600 smaller islands belonging to New Zealand. The country is divided into 16 regions and the capital is Wellington. The climate here is predominantly temperate maritime although the conditions may vary sharply across individual regions and with the seasons.

Map of New Zealand
Christchurch is the largest city in the South Island

Christchurch

Christchurch, located in the Canterbury region, is home to about 400,000 people, making it the third most populous city in NZ after Auckland and Wellington. It is one of the largest manufacturing centers in NZ. Christchurch's Airport became NZ's first international airport in 1950 and is currently the second busiest airport in the country after Auckland.

Christchurch is antipodal with A Coruña, Spain, making it one of only eight pairs of near-exact antipodal cities in the world. A notable feature of the city is the availability of water that is rated among the purest and cleanest in the world.

The chalice sculpture, constructed at the center of the city representing the native tree leaves of NZ, marks the 150th anniversary of Christchurch

While archaeological evidence indicates that the Christchurch area was settled by humans around 1250, Christchurch became a city in 1856 by Royal Charter. It is officially the oldest established city in NZ.

Christchurch has a unique New Zealand Heritage site consisting of two historic buildings: the Riccarton House and Deans Cottage which are bordered by the Avon (*Otakaro*) River and set against an extensive native bush forest that is home to 600 year old *Kahikatea* trees.

NZ Heritage sites: Riccarton House (top), Deans Cottage and Riccarton Bush entrance (bottom)

Located close to the city center are Canterbury Museum, the Botanic Gardens, and the Christchurch Art Gallery.

The Avon River separates the Christchurch Botanic Gardens and Hagley Park (North)

Christchurch has a history of Antarctic exploration and can be described as a gateway to Antarctica. The International Antarctic Centre provides base facilities, a museum and a visitor center focused on the current activities in Antarctica.

Christchurch is a distinctly English city with European elements and Gothic Revival Architecture set against Maori culture making it a popular tourist destination. The location of Christchurch, close to the ski fields of the Southern Alps, makes it a unique stopover for many tourists.

Historic water wheel on the Avon River

University of Canterbury

The University of Canterbury (UC) was established as Canterbury College in 1873. It is a holistic place of learning with seven pillars including UC academic, UC enterprise, UC community, UC bicultural, UC Global, UC Support and UC Active, and a leading multi-disciplinary university. International ranking agency QS ranked UC 214 in the 2017 World University Rankings. It is ranked third in the country. UC has exchange agreements with over 50 universities worldwide and has a unique Erskine Fellowship program that brings 75 international academics to UC each year.

UC has a main campus of 76 hectares at Ilam, a suburb of Christchurch about 5 km from the center of the city.

Since 2007 the University has comprised five Colleges: Arts; Business & Law; Education, Health & Human Development; Engineering; Science.

Engineering Core, University of Canterbury

The Department of Mechanical Engineering is a leading department of nine within the College of Engineering. It covers a vast range of research areas including:

- Acoustics and vibrations
- Applied mechanics
- Biomedical engineering
- Design
- Electrospinning
- Fluid mechanics
- Manufacturing
- Materials science and engineering
- Robotics, control and instrumentation
- Thermodynamics and heat transfer

UC SPARK (http://www.canterbury.ac.nz/spark/search.aspx) is a searchable, comprehensive web platform of current research being carried out at the University of Canterbury. UC SPARK provides information about individual researchers, projects, research centers and collaborations as well as facilities and special equipment.

UC has the vision of supporting people to make a difference in the world. The university's mission is to contribute to society through knowledge in chosen areas of endeavor by promoting a world-class learning environment known for attracting people with the greatest potential to make a difference. UC seeks to be known as a university where knowledge is created, critiqued, disseminated and protected and where research, teaching and learning take place in ways that are inspirational and innovative.

UC has also made a commitment to sustainability, not just in terms of the university's current impact but also in its role as an educational institution that prepares students for the future.

Useful Information

Arriving at UC

The IUTAM Symposium is hosted by the Mechanical Engineering Department with generous support of the College of Engineering and University. The venue for the Symposium is the newly completed Engineering Core building on the Ilam Campus. The university and the city center of Christchurch are within 15 min reach (by car or public transport) from the airport.

From **Christchurch Airport** you can take one of the **buses** (costs around $8.00 per person):

- Purple Line (every 30 min, 07:00 to 23:00). Get off at Ilam Rd near Montana Ave and walk for about 10 mins to Engineering Core
- 29 Airport to City (every 30 min, 06:00 to 23:30, Mon-Sat and 07:00 to 22:30, Sun). Get off at Memorial Ave near Chilcombe St and walk for about 15 mins to Engineering Core.

Alternative ways of transport. You can reserve a shuttle or a cab from one of the following options:

- Super Shuttle - The fare is around $24 for a shared ride and $75 for exclusive use. The booking link: (www.supershuttle.co.nz)
- Taxi - The fare is about $40. Contact phone numbers:

+64 (0) 3-379 9799
+64 (0) 3-379 5795

Practical Matters

Time zone: New Zealand Daylight Time is 13 hours ahead of Greenwich Mean Time, i.e. UTC+13:00

The **climate** in New Zealand is temperate Oceanic. It is advised to be prepared for all weather conditions. NZ lacks ozone layer protection; it is strongly recommended to use sunblock, sunhats, rain gear and windbreakers during your visit.

Supermarkets are usually open from 07:30 to 21:00 Monday-Sunday. Large supermarkets are open from 6:00 to 23:00 or midnight.

Prices in New Zealand include Goods and Services tax (GST). Tipping is not common practice.

Post offices and mailboxes are commonly red and exhibit the label "NZ Post". The University of Canterbury has a NZ post service center conveniently located on campus, in the Undercroft (Puaka-James Hight/Central Library Building, inside the pharmacy).

The **tap water** in Christchurch is safe to drink.

The **voltage** in NZ is 234/240 volts (50 Hz). The power sockets are of TYPE1, suitable for flat 2-pin or 3-pin plugs.

Pharmacies are open Monday-Saturday from 09:00 to 18:00. Some over-the-counter medication is also available at the supermarkets. The pharmacy on UC campus is open Monday-Friday from 08:30 to 17:30.

Wireless internet: Eduroam and a UC Visitor account is available for conference participants at the conference venue. Further connection details are provided at the registration desk.

Emergency Contacts

New Zealand has four main emergency services – Fire service, the Police, ambulances and Civil Defense – the **emergency phone number is 111** from any phone.

On campus emergency

Ext: 6111 (from a campus landline) or

Direct dial: 0800 823 637 or (03) 364 2111

UC Security (not in an emergency)

Ext: 6888 (from a campus landline) or

Direct dial: (03) 364 2888

Social Program

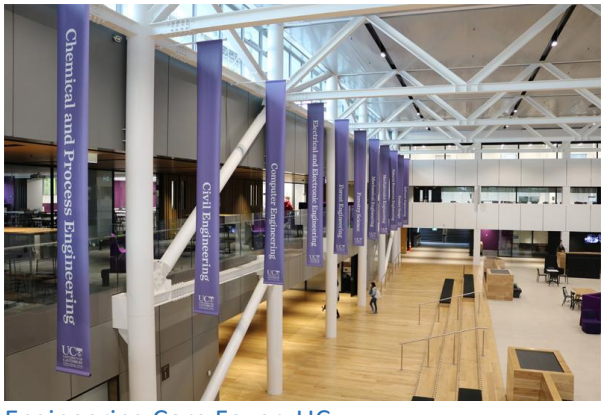
Registration and Welcome Reception

The early Registration and Welcome for the IUTAM Symposium will take place on **Sunday, 11 February 2018 from 18:00 to 20:00** in the Foyer of the John Britten building at 69 Creyke Rd, Ilam. The organizers will be available for the whole evening.

John Britten Building

The John Britten building was the first five-star Green Star educational building in New Zealand and is home to the College of Engineering. The building was renamed in 2015 as a celebration of the entrepreneurial spirit and creative genius of John Britten, the inventor of the Britten motorcycle.

The Regular Registration will start on **Monday, 12 February 2018 at 08:30**, in the foyer of the Engineering Core (Symposium Venue).



Engineering Core Foyer, UC

Reception

The Symposium Reception will be hosted at the University of Canterbury Staff Club, Ilam Homestead on **Monday, 12 February 2018 from 18:00 onwards**.

The Staff Club, Ilam Homestead

Ilam Homestead is an NZ heritage site and occupies attractive premises in the magnificent grounds of Ilam Gardens. The original building was built in 1858 by John Watts-Russell who came to Canterbury in 1850 on the *Sir George Seymour*, one of the first four immigrant ships of the Canterbury Association. The Staff Club was originally formed in 1929. After considerable reconstruction, the Ilam Homestead was made available to the club through the generous support of the University Council and the University Grants Committee. The Ilam Homestead was officially inaugurated in March 1971.

The address is 87 Ilam Rd, Christchurch, which can be found on the campus map.

Symposium Dinner

Curator's House

The Symposium Dinner will be held on **Tuesday, 13 February 2018** at the Curator's House. The event consists of drinks at 18:30 followed by dinner at 19:00. The bus

to the Curator's House will leave from the Engineering Core at **18:00.**

The Curator's House

The Curator's House is an authentic Spanish Cuisine restaurant situated in the picturesque Botanic Gardens. The present house was built in 1920 after a request from the then curator James Young. The building is classified as a Category 2 New Zealand Heritage site and is known for its architectural and aesthetic significance.

Excursion to Akaroa

Symposium Participants are invited on the excursion to Akaroa, a unique village located on the Banks Peninsula. The bus leaves from Engineering Core on **Wednesday, 14 February 2018 at 12:30**.

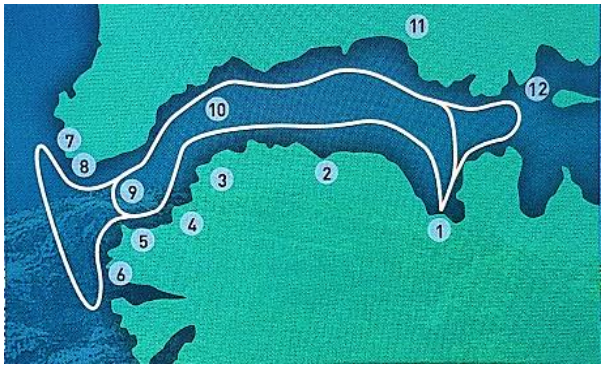
Akaroa

Just 75 km from Christchurch, Akaroa (*Maori* for Long Harbor) is an historic French and British settlement nestled in the heart of an ancient volcano. The village has iconic colonial architecture bordered by beautiful bays and harbors. It is known for the largest 'Little Penguin' colony on mainland NZ and the waters are home to the rarest and smallest marine dolphins, 'Hector Dolphins'. NZ fur seals and a myriad of birdlife are also found.

The drive to Akaroa is through beautiful and changing landscape with many natural and cultural features. There is short stop at Little River on the way.

Scenery from the drive to Akaroa

The delegation will embark on a 2-hour Nature cruise around Akaroa Harbor on **Wednesday, 14 February 2018 at 15:40.**



The route map for Nature Cruise (*Courtesy of Black Cat Cruises*)

The cruise itinerary includes

1 Akaroa	7 Scenery Nook*
2 Onuku Marae	8 Timu Timu
3 Cathedral Cove	9 Dolphins
4 Palm Gulley	10 Seabirds
5 Te Ruahine	11 Wainui
6 The Lighthouse*	12 Upper Harbor*

*Route may vary depending on weather and sea conditions.

The bus departs from Akaroa at **20:00** and arrives back at Christchurch at around **21:30**.

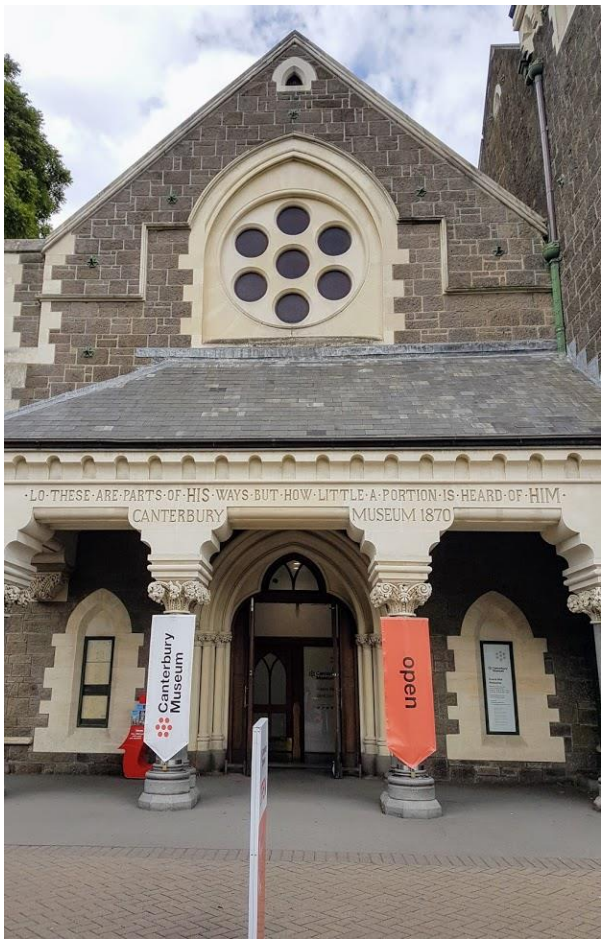
Additional information about the cruise and the village is available at the registration desk.

Things to do in Christchurch

Especially for accompanying people

Canterbury Museum, Hagley Park and Botanic Gardens

Visit and explore New Zealand's rich cultural and natural heritage. The Canterbury Museum is open every day 09:00 to 17:30 with free admission.



Canterbury Museum

The Christchurch Hagley Park and Botanic Gardens, located in the center of the city, sprawl over an area of 165 hectares. Hagley Park is the largest urban space and the Botanic Gardens are home to a variety of exotic and New Zealand native plants.

Botanic Gardens, Rolleston Ave Entrance

Te Puna o Waiwhetu – The Christchurch Art Gallery

The Art Gallery showcases a treasury of art and is a landmark building for the city of Christchurch. It features a spectacular flowing glass and metal façade that evokes the sinuous form of the *koru* and the River Avon. The Maori name relates to the life-giving properties of the spring on which the Gallery is built.

Christchurch Art Gallery

Christchurch Street Art

Christchurch is ranked alongside New York, Barcelona, Berlin and London as one of the

street art capitals of the world. Contemporary art is vital part of the energy of the city. Take a guided bike tour or just walk and be amazed by the talent of the street art enthusiasts.

Street art near YMCA, Christchurch

New Regent St. and Re:Start Mall

New Regent St. is a pedestrian mall in Christchurch built in the 1930s in Spanish Mission architectural style. The notable feature is that the entire street has a historic area listing.

New Regent Street

The Re:Start Mall is a 15 minute walk from New Regent Street and was built as a response to the 2011 Christchurch Earthquakes. Also close by is the famous Bridge of Remembrance which links Oxford and Cambridge Terraces over the Avon river. The arch and the bridge serve as a war memorial.

The Arch and the Bridge of Remembrance

The Sign of the Takahe

This beautiful NZ Category 1 heritage site was built in the style of an English Manor House and overlooks the city and Lyttleton Harbor.

The sign of the Takahe

Other sights

1. Christchurch Tramway
2. Bridle Path Walk (3h return)
3. Isaac Royal Theater
4. Gondola ride in Heathcote Valley
5. Rehua Marae (Māori Culture)
6. Willowbank Wildlife Reserve (Kiwi bird, Māori Cultural Performance)
7. Transitional Cathedral
8. White Chairs Earthquake Memorial

Additional information is available at the registration desk.

Scientific Program

IUTAM Keynote Speakers

Frédéric Dias

Professor, University College Dublin

Frédéric Dias received a PhD in Civil and Environmental Engineering from the University of Wisconsin, Madison, USA, in 1986. He started his career in the US before moving back to France to join CNRS in 1990. In 2009, he joined the team at University College Dublin (UCD) to work on wave energy converters. He currently leads the wave group at UCD. He received am advanced grant from the European Research Council, in 2012 to work on extreme wave events, and a proof of concept grant in 2014 to work on wave measurement.

Prof. Dias is the Co-Chief Editor of the European Journal of Mechanics B/Fluids and has been Secretary General of IUTAM form 2008 to 2016. He has been awarded the Emilia Valori Prize for applications of science by the French Academy of Sciences in the year 2014. Prof. Dias has been an elected member of the Royal Irish Academy since 2016 and of the Academy of Europe since 2017.

Scott McCue

Professor, Queensland University of Technology

Scott McCue is a Professor of Applied Mathematics and Discipline Leader for Applied and Computational Mathematics at Queensland University of Technology (QUT). Prof. McCue was awarded a PhD in Applied Mathematics from The University of Queensland, Brisbane, Australia, in 2000. He worked as a Postdoctoral researcher for two years each at the Universities of Nottingham and Wollongong before starting his first lecturing position at Griffith University, Brisbane. He moved to QUT and has remained there ever since 2007.

Prof. McCue's research interests cover the broad topics of moving boundary problems, interfacial dynamics and mathematical biology. He has co-authored 75 journal articles and a number of conference proceedings. He has received over $2.8 million in funding for Australian Research Council (ARC) projects. His current research project beginning in 2018 is on Mathematical and Computational Analysis of Ship Wakes.

Yvonne Stokes

Associate Professor, The University of Adelaide

Yvonne Stokes is an ARC Future Fellow and a Professor in the School of Mathematical Sciences at The University of Adelaide. She completed a BSc in Mathematics and Computer Science at Murdoch University, and Honors in Applied Mathematics at The University of Adelaide while working as a technical draftsperson. She later pursued a PhD in Applied Mathematics and held an ARC Postdoctoral Fellowship (2000-2002) before obtaining a tenured Lecturer position at the University of Adelaide.

Dr. Stokes is a passionate mathematical modeler, particular where differential equations are employed. Her research interests in mathematical biology have been on nutrient transport and uptake and more recently on chemical signaling with applications in assisted reproduction technologies. She is a member of the Australian Academy of Science (National Committee for Mechanical and Engineering Sciences) and the Chair of Women in Mathematics Special Interest Group (WIMSIG) of the Australian Mathematical Society.

Jun Zhang

Professor, New York University & NYU Shanghai

Jun Zhang is a joint Professor of Physics and Mathematics, New York University, USA & NYU Shanghai, China. He holds a Global Network Professorship with NYU Shanghai. He has received his PhD in Physics from the Niels Bohr Institute at the University of Copenhagen, Denmark in 1994. He has been the Co-Director of the Applied Mathematics Laboratory at Courant Institute, New York, USA.

Prof. Zhang presented more than 200 talks, seminars and public lectures at different institutions, conferences and workshops. Some of them had more than 500 attendees. He presented more than 50 contributed talks and more than 15 posters at APS meetings and other research conferences. Many of his scientific findings were featured in popular science media such as the New York Times, New Yorker, The Economist, Le Monde, BBC, ABC, and many web-based media sources.

Program Overview

Sunday, February 11

Venue: John Britten Building, 69 Creyke Rd, Ilam	
18:00 - 20:00	Early Registration and Welcome Reception

Monday, February 12

	Venue: E5, Engineering Core
08:30 - 09:30	Registration
09:30 - 10:00	Opening Address
10:00 - 11:00	Keynote: Symmetry breaking bifurcations arising from fluid-structure interaction *Presenter: Jun Zhang* *Author(s): Zhang J*
11:00 - 11:30	Tea Break
	Morning Session (Chair: Mark Jermy)
11:30 - 11:50	Aerodynamical and structural analysis of operationally used turbine blades *Presenter: Jörg Wallaschek* *Author(s): Schwerdt L, Hauptmann T, Kunin A, Seume JR, Wallaschek J, Wriggers P, Panning-von Scheidt L, Löhnert S*
11:50 - 12:10	Modelling free flying insect with flexible wings *Presenter: Yang Yao* *Author(s): Yeo KS, Yao Y, Nguyen TT, Yao J*
12:10 - 12:30	Three-dimensional flight simulation with transient moving-aerofoil models *Presenter: Arion Pons* *Author(s): Pons A, Cirak F*
12:30 - 12:50	Coupling post-buckling oscillations and fluid flow: swimming at the micron scale *Presenter: Catherine Quilliet* *Author(s): Djellouli A, Quilliet C, Djeridi H, Marmottant P, Coupier G*
12:50 - 14:20	Lunch

Monday Afternoon Session (Chair: Rosalind Archer)	
14:20 - 14:40	Vortex shedding and flow-induced vibration of multiple cylinders in tandem *Presenter: Negar Mohammadhosseini* *Author(s): Mohammadhosseini N, Griffith MD, Leontini JS*
14:40 - 15:00	Flow-induced vibration of fully- and semi-passive flapping foils *Presenter: Justin S. Leontini* *Author(s): Leontini JS, Griffith MD, Jacono DL, Sheridan J*
15:00 - 15:20	Computational modelling of sheep forestomach contractions using OpenFOAM *Presenter: Stephen J. Waite* *Author(s): Waite SJ, Cater JE, Waghorn G, Suresh V*
15:20 - 15:40	Temperature control in skin sonoporation setup *Presenter: Jeremy Robertson* *Author(s): Robertson J, Becker S*
15:40 - 16:10	Tea Break
16:10 - 16:30	Mixing efficiency in arrays of artificial villi *Presenter: Aaron Fishman* *Author(s): Fishman A, Homer M, Lawrie A, Rossiter J*
16:30 - 16:50	CFD reconstruction of blood hemodynamic based on a self-made algorithm in patients with acute IIIb aortic dissection treated with TEVAR procedure *Presenter: Andrej Polanczyk* *Author(s): Polanczyk A, Piechota-Polanczyk A, Neumayer C, Huk I*
16:50 - 17:10	Structures subject to movable boundary conditions and some related intriguing behavior *Presenter: Francesco Dal Corso* *Author(s): Dal Corso F, Misseroni D, Bigoni D*
Venue: Staff Club, Ilam Homestead, 87 Ilam Rd, Ilam	
18:00 - 20:30	Reception

Tuesday, February 13

Venue: E5, Engineering Core	
08:30 - 09:30	Registration
09:00 - 10:00	Keynote: Can we fabricate that fiber? *Presenter: Yvonne M. Stokes* *Author(s): Stokes YM*
Morning Session (Chair: Miguel Moyers Gonzalez)	
10:00 - 10:20	A level-set method for droplet motion in a porous medium *Presenter: Gihun Son* *Author(s): Yu H, Son G*
10:20 - 10:40	The three dynamical regimes of a droplet driven by thermocapillarity *Presenter: Mathieu Sellier* *Author(s): MacIntyre JR, Gomba JM, Perazzo CA, Correa PG, Sellier M*
10:40 - 11:10	Tea Break
11:10 - 11:30	Simulation of the ultrasound-induced growth and collapse of a near-wall bubble *Presenter: Bradley Boyd* *Author(s): Boyd B, Becker S*
11:30 - 11:50	Modelling of dynamic free-surface impacts using a combined Eulerian Lagrangian finite element approach *Presenter: Tom Allen* *Author(s): Allen T, Cummins H, Robb A, Battley M, McArthur B, Li K-Y*
11:50 - 12:10	Air flow entrainment of lactose powder: simulation and experiment *Presenter: Digby Symons* *Author(s): Kopsch T, Murnane D, Symons D*
12:10 - 12:30	Lamella puncture and healing after droplet impact *Presenter: Hossein Rashidian* *Author(s): Rashidian H, Sellier M*
12:30 - 14:00	Lunch

Tuesday Afternoon Session (Chair: Peter Hagedorn)	
14:00 - 14:20	On the stability of free-boundary problems: a case study in vortex dynamics *Presenter: Bartosz Protas* *Author(s): Protas B*
14:20 - 14:40	A one-field fictitious domain method for fluid-structure interactions *Presenter: Yongxing Wang* *Author(s): Wang Y, Jimack PK, Walkley MA*
14:40 - 15:00	Numerical simulation in coupled hydroelastic problems by using the LS-STAG immersed boundary method *Presenter: Ilia K. Marchevsky* *Author(s): Marchevsky IK, Puzikova VV*
15:00 - 15:20	The improved algorithms of vortex method for 2D fluid-structure interaction simulation *Presenter: Kseniia S Kuzmina* *Author(s): Kuzminz KS, Marchevsky IK*
15:20 - 15:50	Tea Break
15:50 - 16:10	A geometry-adaptive immersed boundary-lattice Boltzmann method for modelling fluid-structure interaction problems *Presenter: Fang-Bao Tian* *Author(s): Xu L, Tian F-B, Young J, Lai JCS*
16:10 - 16:30	Immersed boundary-lattice Boltzmann method for solving moving boundary problems *Presenter: Barsharat Ali Haider* *Author(s): Haider BA, Adeeb E, Sohn CH*
16:30 - 16:50	Toward the problem of low RE flows through linearly elastic porous media *Presenter: Sid Becker* *Author(s): Becker S*
Venue: Curator's House, 7 Rolleston Ave, Christchurch Central	
18:00	Bus departures from Creyke Rd (Engineering Core)
18:30 - 19:00	Drinks & Social Interaction
19:00 - 21:30	Dinner

Wednesday, February 14

	Venue: E5, Engineering Core
08:30 - 09:00	Registration
09:00 - 10:00	Keynote: Three dimensional linear and nonlinear surface wave patterns *Presenter: Scott W. McCue* *Author(s): McCue SW, Pethiyagoda R, Moroney TJ*
	Morning Session (Chair: Mathieu Sellier)
10:00 - 10:20	Approximate analytical solution of the one phase Stefan problem for the sphere *Presenter: Robert B. Shorten* *Author(s): Shorten RB*
10:20 - 10:40	Selection criterion of stable mode of dendritic growth with n-fold symmetry at arbitrary Péclet numbers in the presence of a forced convective flow *Presenter: Dimitri V. Alexandrov* *Author(s): Alexandrov DV, Galenko PK*
10:40 - 11:10	Tea Break
11:10 - 11:30	Riemann-Hilbert problems to link flow-driven erosion, dissolution and melting *Presenter: M. Nicholas J. Moore* *Author(s): Moore MNJ*
11:30 - 11:50	Evolution of a melting solid sphere of ice in cross-flow *Presenter: James N. Hewett* *Author(s): Hewett JN, Sellier M*
12:10 - 20:00	**Excursion to Akaroa** Depart Engineering Core at 12:15
15:40 - 17:40	**Akaroa Harbor Nature Cruise**
20:00 - 21:30	Return to Christchurch by bus

Thursday, February 15

Venue: E5, Engineering Core	
08:30 - 09:00	Registration
09:00 - 10:00	Keynote: Recent advances in slamming *Presenter: Frédéric Dias* *Author(s): Dias F*
Morning Session (Chair: Stefanie Gutschmidt)	
10:00 - 10:20	The moving boundary problem of a semi-infinite cable resting on a unilateral foundation *Presenter: Stefano Lenci* *Author(s): Lenci S*
10:20 - 10:40	Analysis of 3D crack boundary value problems by means of the enriched scaled boundary finite element method *Presenter: Wilfried Becker* *Author(s): Hell S, Felger J, Becker W*
10:40 - 11:10	Tea Break
11:10 - 11:30	Analysis of dynamic variable mass and variable parameter systems applying semi-analytical time-integration *Presenter: Helmut J. Holl* *Author(s): Holl HJ*
11:30 - 11:50	Equipartition of modal energy in a vibrating string due to a finite curved boundary obstacle *Presenter: Pankaj Wahi* *Author(s): Mandal AK, Wahi P*
11:50 - 12:10	The FEM for a loaded column with harmonic axial forcing using a large number of solid elements *Presenter: Eoin J. Clerkin* *Author(s): Reiken M, Clerkin EJ*
12:10 - 12:30	Fluid-dynamic effects of non-neighboring members in an array *Presenter: Arun Kumar Manickavasagam* *Author(s): Manickavasagam AK, Wagner N, Gutschmidt S, Sellier M*
12:30 - 14:00	Lunch

Thursday Afternoon Session (Chair: Sid Becker)	
14:00 - 14:20	Shape optimization approach to inverse problems in corrosion detection from partial Cauchy data *Presenter: Julius Fergy T. Rabago* *Author(s): Rabago JFT, Azegami H*
14:20 - 14:40	Optimal hydrodynamic vibration damper with an inner moving mass *Presenter: Alexander Fidlin* *Author(s): Jehle G, Fidlin A*
14:40 - 15:00	Viscosity of printable concrete via extrusion head *Presenter: Yong Yuan* *Author(s): Yuan Y, Tao Y*
15:00 - 15:10	Closing Remarks

Organized by

University of Canterbury
Mechanical Engineering Department
Christchurch, NZ

Co-Chairs

Dr Stefanie Gutschmidt
A/Prof Mathieu Sellier

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Editorial

Dr Stefanie Gutschmidt, Minni Gorthy, Dr James Hewett

Photos

Private courtesy of

- Minni Gorthy
- Tabea Gutschmidt
- James Hewett

Maps

IUTAM Symposium on
Recent Advances in Moving Boundary Problems in Mechanics

Symposium Organization

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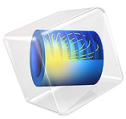

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