

2nd Symposium on Fluid-Structure-Sound Interactions and Control

May 20-23, 2013, Hong Kong & Macau



Conference Program and Extended Abstracts

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Welcome

The Organizing Committee of the 2nd Symposium of Fluid-Structure-Sound Interactions and Control (FSSIC) would like to take this opportunity to welcome you to China, to Hong Kong and Macau, and to the 2nd meeting of this symposium. The FSSIC series was launched jointly by China Aerodynamics Research and Development Center (CARD) and The Hong Kong Polytechnic University (PolyU) in 2011 and is held biannually. Its inception was held in Yinchuan City, China in 2011, which was largely a domestic meeting. It is the decision of this Organizing Committee to now internationalize this series of meetings.

The main reason for developing the F-S-S interactions and control theme relates to the increasingly grievous concerns of fluid- or turbulence-related structural vibration and noise problems widely encountered in engineering. On the other hand, new opportunities are emerging with the advent of various new techniques such as signal processing, flow visualization and diagnostics, new functional materials, sensors and actuators. This will no doubt help to revitalize research activities in an interdisciplinary area. Accordingly, the FSSIC series will feature a broad range of lectures on turbulence, fluid-structure interaction, fluid-related noise and their control. Much of the associated research is clearly interdisciplinary, as evidenced by many of the 86 presentations and over 100 extended abstracts submitted to this meeting. Finally, this meeting will also serve to inaugurate the recently established Research Institute of Turbulence-Noise-Vibration Interactions and Control at Harbin Institute of Technology (HIT).

The Committee is very grateful for the contributions of the keynote speakers, Robert Antonia, Ivan Marusic, Alexander Smits, Shiyi Chen, Ethirajan Rathakrishnan and James Grothberg, and the 30 reviewers of the extended abstracts and full papers. The Committee would also like to acknowledge the support of PolyU, CARD, HIT and Springer-Verlag GmbH, and the sponsors: OPLAN (LaVision), Dantec Dynamics and Hong Kong Society of Theoretical and Applied Mechanics.

Finally, as Chair, I would like to thank Robert Antonia for his valuable advice, Lixi Huang, Yang Liu, Chi Wai Wong and the other members of the Committee for their dedicated efforts, and the staff, especially Lily Tam, Cici Wu, Yan Wong and Vela Chen, of PolyU and HIT. I hope that FSSIC2013 will inspire everyone and bring valuable experience for all delegates and visitors.

Yu Zhou
Chair

Organization

The conference is jointly hosted by The Hong Kong Polytechnic University (PolyU), China Aerodynamics Research & Development Center (CARDC) and Harbin Institute of Technology (HIT).

Organizing Committee

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Lixi Huang *Co-Chair*
Yang Liu *Secretary*
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He, L. (UK)	Sumner, D. (Canada)
Hodges, D.H. (USA; also symposium editor)	Sun, H. (China)
Hourigan, K. (Australia)	Wang, J. J. (China)
Kagawa, T. (Japan)	Wen, C. Y. (Taiwan)
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Luo, X. Y. (UK)	Ziada, S. (Canada)
Martinuzzi, R. (Canada)	

The Hong Kong Polytechnic University

The Hong Kong Polytechnic University (PolyU), formerly known as The Hong Kong Polytechnic, is the largest government-funded university in Hong Kong. The University maintains strong partnerships with the business and industrial sector, while expanding its role as a research institution. It is ranked within the top 150 universities in the world.

China Aerodynamics Research & Development Center

China Aerodynamics Research and Development Center (CARDC), located in Mianyang of Sichuan Province, is the largest and leading research and development institute of the nation for aerodynamic research and testing. It was founded in 1968 to meet the needs of the development of aeronautical and astronautical undertaking and national economy.

Harbin Institute of Technology

Harbin Institute of Technology (HIT) was founded in 1920 and has since developed into a nationally renowned multi-disciplinary university with science and engineering as its core strength. HIT is consistently on the forefront in making innovations in research. HIT has in the past few decades undertaken numerous large-scale and highly sophisticated national projects such as developing its own satellite (successfully launched into the space), the first of its kind made by a university in China, making its scientific research achievements always among the best of all Chinese universities.

Sponsors and Exhibitors

The Organizing Committee of the 2nd Symposium on Fluid-Structure-Sound Interactions and Control would like to thank the following sponsors and exhibitors for their support:



LAVISION's representative in China



北京欧兰科技发展有限公司

OPLAN



Springer

DANTEC's representative in China



General Information

1. Overview of the Symposium

Hong Kong

Monday 20 May 2013

08:30am – 09:10am	Registration	PolyU, Chiang Chen Studio Theatre
09:10am – 01:00pm	Symposium ongoing	PolyU, Chiang Chen Studio Theatre
01:00pm – 02:30pm	Lunch	PolyU, Communal Building, 4/F
02:30pm – 07:05pm	Symposium ongoing	PolyU, Building N001-003
08:00 pm – 10:00pm	Reception dinner	Victoria Harbor Cruise (depart from Hung Hom Ferry Piers)

Tuesday 21 May 2013

09:00am – 01:00pm	Symposium ongoing	PolyU, Building N003
01:00pm – 02:15pm	Lunch	PolyU, Communal Building, 4/F
02:15pm – 06:20pm	Symposium ongoing	PolyU, Building N001-003
07:30pm – 09:30pm	Symposium Banquet	The Cafe Deco Bar & Grill, Victoria Peak

For the location of venues, please refer to map 1 (page 6).

For shuttle bus time table, please refer to page 7.

Hong Kong/Macau

Wednesday 22 May

10:30am	Ferry to Macau	China Ferry Terminal, Kowloon
12:15pm – 12:45pm	Check-in	The Westin Resort, Macau
12:45pm – 07:15pm		Tour in Macau (self-funded)
07:30pm – 09:30pm	Dinner	Restaurante Fernando

For ferry departure time table, please refer to page 6.

Macau/ Hong Kong

Thursday 23 May 2013

08:30am – 12:45pm	Symposium ongoing	The Westin Resort
12:45pm – 02:00pm	Lunch	The Westin Resort
03:30pm	Ferry to Hong Kong	Macau Maritime Ferry Terminal

For any enquiries, please visit the registration desk or contact the conference secretaries, Drs. Yang Liu and Chi Wai Wong (+852-51125703) or conference clerk, Miss Cici Wu (+852-61812503).



Map 1. Campus map of the Hong Kong Polytechnic University

1. Core A Fountain Square Entrance (shuttle bus pick-up/drop-off point)
2. Chiang Chen Studio Theatre
3. Shaw Amenities Building (Bank and ATMs)
4. Communal Building
5. Building N
6. MTR Hung Hom Station

2. Ferry and Free Shuttle Bus Arrangements in Hong Kong and Macau

Details of ferry arrangement

Date & Departure Time	Departure	Arrival
Wednesday 22 May 2013 10:30am	China ferry terminal, Kowloon	Macau Maritime Ferry Terminal
Thursday 23 May 2013 03:30pm (<i>see note 1</i>)	Macau Maritime Ferry Terminal	China ferry terminal, Kowloon
Friday 24 May 2013 10:00am (<i>see note 1</i>)	Macau Maritime Ferry Terminal	China ferry terminal, Kowloon

Details of free shuttle bus arrangement

Date & Departure Time	Pick-up location	Drop-off location
Monday 20 May 2013 08:15am (see note 2)	The Royal Park Hotel & The Regal Riverside Hotel	PolyU, Core A Fountain Square Entrance
Monday 20 May 2013 07:15pm	PolyU, Core A Fountain Square Entrance	Hung Hom Ferry Piers
Monday 20 May 2013 10:00pm	Hung Hom Ferry Piers	PolyU, The Royal Park Hotel, The Regal Riverside Hotel
Tuesday 21 May 2013 08:15am (see note 2)	The Royal Park Hotel & The Regal Riverside Hotel	PolyU, Core A Fountain Square Entrance
Tuesday 21 May 2013 06:40pm	PolyU, Core A Fountain Square Entrance	The Cafe Deco Bar & Grill
Tuesday 21 May 2013 09:30pm	The Cafe Deco Bar & Grill	Lan Kwai Fong, PolyU, The Royal Park Hotel, The Regal Riverside Hotel
Wednesday 22 May 2013 08:00am	The Royal Park Hotel & The Regal Riverside Hotel	China Ferry Terminal, Kowloon, Hong Kong
Wednesday 22 May 2013 12:00noon	Macau Maritime Ferry Terminal	The Westin Resort, Macau
Thursday 23 May 2013 02:15pm	The Westin Resort, Macau	Macau Maritime Ferry Terminal

Special Notes:

1. Two options are available; you may choose to depart from Macau on Thursday (23 May) or Friday (24 May). The Organizing Committee assumes participants to return to Hong Kong on Thursday afternoon. Please let us know at the registration desk if you prefer to return to Hong Kong on Friday morning. Please note that the travelling time between Hong Kong and Macau is approximately one hour.
2. If you miss the shuttle bus and you are staying at Regal Riverside Hotel, you can take 15 minutes walk from the Regal Riverside Hotel to Sha Tin train station, and then take the train (East Rail Line) bound for Hung Hom station. Similarly, for those who stay at the Royal Park Hotel, you can reach the Sha Tin train station in a few minutes by walk, and then take the train to Hung Hom station.
3. The shuttle buses are operated strictly according to the time schedule. Please wait for the bus at the specified time and location. Should you miss the shuttle bus, you can travel to various venues by other means of transportation.
4. Before you get on the shuttle bus, please make sure this is the right one which can take you to your hotel. Please pay attention to the sign board displayed in the front of buses.
5. Please take good care of your important personal belongings and do not leave them in the shuttle buses.

3. Hotel information

Hong Kong

The Royal Park Hotel, Hong Kong

Address: 8 Pak Hok Ting Street, Shatin,
Hong Kong

Tel: (852) 2601 2111

Fax: (852) 2601 3666

Website: <http://www.royalpark.com.hk>

Enquiries: kenniskwong@royalpark.com.hk



The Regal Riverside Hotel, Hong Kong

Address: 34-36 Tai Chung Kiu Road, Shatin,
Hong Kong

Tel: (852) 2649 7878

Fax: (852) 2637 4748

Website: www.regalriverside.com

Enquiries: rrh.samc@regalhotel.com



Macau

The Westin Resort, Macau

Address: 1918 Estrada de Hac Sa, Coloane.
Macau

Tel: (853) 2887 1111

Fax: (853) 8899 1195

Enquiries: Lawrence.Cheng@westin.com



4. Registration desk

Registration desk hours

Sunday 19 May 2013	04:00pm – 06:00pm	Royal Park Hotel (Foyer)
	04:00pm – 06:00pm	Regal Riverside Hotel (Foyer)
Monday 20 May 2013	08:30am – 01:00pm	PolyU, Chiang Chen Studio Theatre
Monday 20 May 2013	02:30pm – 06:00pm	PolyU, Building N
Monday 21 May 2013	09:00am – 06:30pm	PolyU, Building N

Delegates who have paid the Symposium registration fees and tax through Shenzhen Graduate School of Harbin Institute of Technology (HITSGS) can collect the receipt from the registration desk. For delegates arriving in May 21, please contact the conference clerks, Ms. Cici Wu and Vela Chen, for registration.

5. Transportations

Hong Kong

For your convenience, there are two recommended means of transportation from Hong Kong International Airport to the Royal Park Hotel and Regal Riverside Hotel. Details are given below:

Transportation	Service Period	Cost & trip time
Airport shuttle bus A41	05:30am – 11:30pm	HK\$22.3; 45 minutes
Airport external bus E42	05:30am – 11:59pm	HK\$13.9; 70 minutes
Taxi (red color)	24 hours	about HK\$275; 30 minutes

It is very convenient to travel, via the Mass Transit Rail (MTR), from Royal Park Hotel and Regal Riverside Hotel to various attractions in Hong Kong. Details of the MTR map can be found at http://www.mtr.com.hk/eng/getting_around/index.html.

Macau

The following information is expected to provide convenience to delegates who wish to take a short tour in Macau. You can get around Macau by city-bus, taxi, sight-seeing buses. Bus lines cover almost all the attractions and hotels on the Macau Peninsular and the main tourist spots on the outlying islands of Taipa and Coloane. The most popular tourist buses are listed below;

Bus No.	Route
21, 21A, 25, 26 and 26A	Running between the Macau Peninsular and islands of Taipa and Coloane
11, 22, 28A, 33 and 34	Running between the Macau Peninsular and island of Taipa

Taxis are in two colors, black and yellow. The black cars have a pale yellow top on each and the services of the yellow cars can be arranged through telephone booking without extra cost. The phone is (853) 519519. A single taxi trip from the Macau Peninsular to Hac Sa Beach in Coloane costs about MOP\$80.

For detailed information about transportation in Macau, please visit <http://www.macautourism.gov.mo/en/info/transport.php>

6. Other information

Name badges

All attendees will be provided with name badges, which provide access to all technical sessions, at registration desk. Please keep it carefully and ensure that you wear your name badge during all sessions and social functions.

Internet access

Wireless internet will be available for delegates on the PolyU campus. The login account user name and password can be obtained from the registration desk. Please note that the internet is not to be used to view or download any illicit material, movies, music etc.

Conference catering and dietary requirements

Please bring lunch and dinner coupons with you to each meal, which will be collected by our staff there. Additional lunch and dinner coupons, HK\$200 and HK\$780, respectively, can be purchased from the registration desk. We provide vegetarian cuisine in our lunches and dinners. For those with special dietary requirements, please contact our staff at the registration desk.

Photographs, video, recording of sessions

Attendees are not permitted to use any type of cameras or recording devices during all the sessions unless written permission has been obtained from the relevant speaker.

Mobile phone

In order to avoid and minimize disturbance to the presenters and audiences, please ensure that all mobile phones and pagers are turned off or in silent mode. Please refrain from talking over the phone in all session rooms.

Banks and ATM

There are some Bank ATMs in the PolyU campus, please refer to Map 1 for the locations of ATMs. The exchange rate is about US\$1 for HK\$7.8. Please note that the majority of cash transactions in Macau are made in Hong Kong dollars, which are accepted on an equal 1:1 basis by almost all businesses.

Smoking

All venues are non-smoking rooms and smoking is not permitted in the PolyU campus or in the restaurant except the designated smoking area.

Conference security

The Organizing Committee accept no liability for personal accident or loss or damage suffered by any participant, accompanying person, invited observer or any other person by whatever means. Neither do we accept liability for any equipment nor software brought to the conference by delegates, speakers, sponsors or any other party. Please protect your personal property.

Bad weather*Tropical Cyclone Warning*

If Signal No.1 or 3 is hoisted on the symposium day, all presentation sessions will be held as scheduled. If Signal No. 8 or above is hoisted or announcement is made by the Hong Kong Observatory that Signal No. 8 or above is likely to be hoisted within the next two hours before the Symposium, then presentation sessions will be postponed. Postponement of the presentation sessions will be announced by FSSIC2013 Organizing Committee in the conference website www.fssic2013.com and through emails. For the revised arrangement of the presentation sessions, please see the conference website or call the Secretary +852-5112-5703 on the following day after the warning has been lowered. Notices for revised arrangement will also be posted on the notice boards of the conference room. If Signal No. 8 is lowered two hours before the commencement of Symposium, the Symposium will be held as scheduled unless otherwise announced by FSSIC2013 Organizing Committee.

Rainstorm Warning

If Amber Warning or Red Warning is issued on the symposium day, all presentation sessions will be held as scheduled. If Black Warning is issued two hours before the Symposium, the presentation sessions will be postponed. Postponement of the presentation sessions will be announced by FSSIC2013 Organizing Committee in the conference website www.fssic2013.com and through emails. You should visit the conference website or call FSSIC2013 Secretary +852-5112-5703 for the revised arrangements on the following day when the Rainstorm Black Warning has been cancelled. Notices for revised arrangements will also be posted on the notice boards of the conference room.

Emergency medical care

For any medical emergency, please call 999 (Hong Kong and Macau). The staff at your hotel will have information if you require contact details for a doctor, dentist or other health professional.

Social Functions

1. Social functions in Hong Kong

Reception dinner on 20 May 2013 (Monday)

Venue: Victoria Harbour Cruise (depart from Hung Hom Ferry Piers)

Time: 08:00pm – 10:00pm



Map 2. Route for Harbour Cruise

A. Tsim Sha Tsui

B. Hung Hom

C. Lei Yue Mun

D. Causway Bay

E. Wan Chai

F. Central

Banquet on 21 May 2013 (Tuesday)

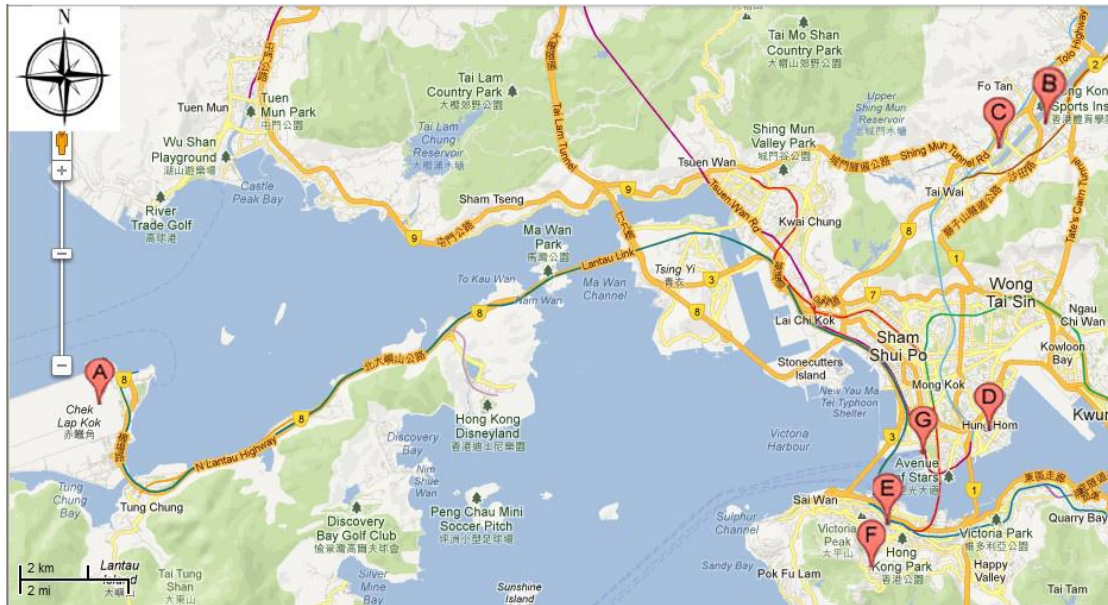
Venue: Café Deco Bar & Grill

Address: The Peak Galleria, 118 Peak Road, The Peak (see Map 3)

Time: 07:30pm – 09:30pm



After the banquet, a free shuttle bus is arranged to take our guests from the Peak, which will stop at Lan Kwai Fong and PolyU, to the Regal Riverside Hotel and Royal Park Hotel. Lan Kwai Fong is Hong Kong's "SoHo", the area "South of Hollywood Road". This cheerful warren of Western-style restaurants, nightclubs, delicatessens and bars is one of the best places to go in Hong Kong for a good night out.



Map 3. Various venues in Hong Kong

- | | |
|------------------------------------|--------------------------|
| A. Hong Kong International Airport | E. Lan Kwai Fong |
| B. The Royal Riverside Hotel | F. Café Deco Bar & Grill |
| C. The Royal Park Hotel | G. China Ferry Terminal |
| D. PolyU | |

2. Social functions in Macau

Dinner on 22 May (Wednesday)

Venue: Restaurante Fernando

Address: 9 HacSa Beach Coloane, Praia de HacSá (see Map 4)

Time: 07:30pm – 09:30pm



Please note that we will meet in the foyer of the Westin Resort at 07:15pm, then we will walk along the Hac Sa Beach, meaning black sand beach, which is one of the most popular beaches in Macau, to the restaurant. The walk will take about 15 minutes.



Map 4. Various venues in Macau

- A. Macau Maritime Ferry Terminal
- B. The Westin Resort Macau
- C. Restaurante Fernando

Publications

1. Extended abstracts;
2. A book entitled "Fluid-Structure-Sound Interactions and Control (1)", which includes selected full papers presented in the Symposium and will be published by Springer soon after this meeting.

Technical Sessions

All plenary and parallel sessions are scheduled in Rooms N001 – N003, except the Monday (20 May 2013) morning sessions which will be held in Chiang Cheng Studio Theatre. Please see the campus map for directions. Any changes to the program will be posted on the notice boards of the conference room daily.

Presentation preparation

Each session room is well equipped with multimedia equipment including a Windows XP PC, projector and screen, white board and microphone. Acceptable file formats for presentations are Microsoft PowerPoint 2007. If you have videos or animations in your presentation, please ensure these are embedded in your presentation and the required files have been transferred together with the PowerPoint file. Preferred movie formats are WMV or AVI.

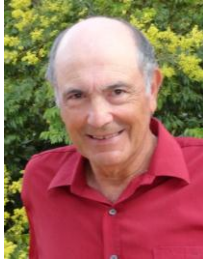
Presenters should ensure their presentations to be loaded (via USB device) onto the session room computer 15 minutes before the session. Session chairs and helpers will be available in the room to assist with loading presentations onto the room computer prior to the session.

Chairpersons Information

Chairpersons are responsible for coordinating the loading of presentations onto the room computer for their session, introducing presenters and ensuring that each session runs strictly to the schedule. Session chairs should be available in the catering break at least 15 minutes prior to their session to meet with presenters and to coordinate loading of PPT files, etc.

Keynote Speakers

Professor Robert Antonia (University of Newcastle, Australia)



Robert Antonia studied Mechanical Engineering at the University of Sydney, and was awarded his PhD in 1970. Following a post-doctoral year at Imperial College on a CSIRO fellowship, he joined the University of Sydney as a lecturer in Mechanical Engineering in 1972. He was appointed to the Chair of Mechanical Engineering at the University of Newcastle in January 1976. During 2001-2005, he was ARC Professorial Fellow at the University of Newcastle. Since 2005, he has been Emeritus Professor at the University of Newcastle. In 2004, he was awarded a Citation Laureate for Engineering by the Publisher Thomson ISI and was elected to the Australian Academy of Science. He is a Fellow of the Australasian Fluid Mechanics Society and Chief International Academic Advisor for the Shenzhen Graduate School of the Harbin Institute of Technology. Robert Antonia has made a number of contributions to turbulence research. Perhaps the most significant relate to the study of the response of a turbulent boundary layer to sudden changes in surface condition, the identification of large scale “organised” motions in a range of turbulent shear flows, including the atmospheric surface layer, and an improved understanding of small scale turbulence. His papers have received more than 9000 ISI citations with an h factor of 48.

Professor James Grotberg (University of Michigan, USA)



James B. Grotberg, PhD, MD, is a Professor in the Department of Biomedical Engineering and the Department of Surgery at the University of Michigan where he is the Director of the NASA Bioscience and Engineering Institute. He was an undergraduate at Cornell University in Biology, received a PhD in Fluid Mechanics at Johns Hopkins University, and obtained an MD from the University of Chicago. He is a member of the select US National Committee on Biomechanics, a Fellow of the American Physical Society's Division of Fluid Dynamics, a Fellow of the American Institute for Medical and Biological Engineering, an Inaugural Fellow of the Biomedical Engineering Society, and a Fellow of the American Society of Mechanical Engineers. The latter cited Dr. Grotberg as “the leading Biofluid Dynamicist in the United States and among the top two or three in the world.” Dr. Grotberg’s research focuses on biofluid dynamics related to the respiratory system. He is known for studying fundamental fluid mechanical phenomena that are motivated by, and directly apply to, medical practice, thereby making unique and fundamental contributions to both communities. During the course of his research and teaching he has given 95 keynote and invited lectures, published 130 refereed journal articles, 14 book chapters, and 260 proceedings and abstracts. He has accomplished this while mentoring 60 trainees, 26 of whom have gone on to become professors around the world. In addition, he has practiced Emergency and Critical Care Medicine as a physician and is active in his local community with minority youth groups.

Professor Ivan Marusic (University of Melbourne, Australia)



Ivan Marusic is a Professor at the University of Melbourne, Australia, and received his PhD from the same institution in 1992. His research is primarily in experimental and theoretical studies of turbulence at high Reynolds numbers. From 1998-2006 he was on the faculty at the University of Minnesota, USA where he was a recipient of a Packard Fellowship in Science and Engineering, and an NSF Career Award. He returned to Melbourne in 2007 as an Australian Research Council Federation Fellow. He presently serves as an Associate Editor for the Journal of Fluid Mechanics, and the Journal of Hydraulic Research, on the Editorial board of Measurement Science and Technology, and as Chair of the Australian National Committee for Mechanical Sciences. He is the President of the Australasian Fluid Mechanics Society, and a Fellow of the American Physical Society.

Professor Ethirajan Rathakrishnan (Indian Institute of Technology, India)



Ethirajan Rathakrishnan is Professor of Aerospace Engineering at the Indian Institute of Technology Kanpur, India. He is well-known internationally for his research in the area of high-speed jets. The limit for the passive control of jets, called *Rathakrishnan Limit*, is his contribution to the field of jet research, and the concept of *breathing blunt nose (BBN)*, which reduces the positive pressure at the nose and increases the low-pressure at the base simultaneously, is his contribution to drag reduction at hypersonic speeds. He has published a large number of research articles in many reputed international journals. He is Fellow of many professional societies, including the Royal Aeronautical Society. Professor Rathakrishnan serves as the *Editor-In-Chief* of the International Review of Aerospace Engineering (IREASE) journal. He has authored 10 books: *Gas Dynamics*, 4th ed. (PHI Learning, New Delhi, 2012); *Fundamentals of Engineering Thermodynamics*, 2nd ed. (PHI Learning, New Delhi 2005); *Fluid Mechanics: An Introduction*, 3rd ed. (PHI Learning, New Delhi 2012); *Gas Tables*, 2nd ed. (Universities Press, Hyderabad, India, 2004); *Instrumentation, Measurements, and Experiments in Fluids* (CRC Press, Taylor & Francis Group, Boca Raton, USA, 2007); *Theory of Compressible Flows* (Maruzen Co., Ltd. Tokyo, Japan, 2008); *Gas Dynamics Work Book* (Praise Worthy Prize, Napoli, Italy, 2010); *Applied Gas Dynamics* (John Wiley, New Jersey, USA, 2010); *Elements of Heat Transfer*, (CRC Press, Taylor & Francis Group, Boca Raton, USA, 2012) and *Theoretical Aerodynamics* (John Wiley, New Jersey, under publication).

Professor Alexander Smits (Princeton University, USA)



Dr. Smits is the Eugene Higgins Professor of Mechanical and Aerospace Engineering at Princeton and Chair of his department. His research interests are centered on fundamental, experimental research in turbulence and fluid mechanics. He is a Member of the National Academy of Engineering, and a Fellow of the American Physical Society, the American Institute of Aeronautics and Astronautics, the American Society of Mechanical Engineers, and the American Association for the Advancement of Science. In 2004, Dr. Smits received the Fluid Dynamics Award of the AIAA. In 2007, he received the Fluids Engineering Award from the American Society of Mechanical Engineers (ASME), the Pendray Aerospace Literature Award from the American Institute of Aeronautics and Astronautics (AIAA), and the President's Award for Distinguished Teaching from Princeton University. In 2009, Dr. Smits received the Médaille de la Ville de Marseille, La Ville de Marseille, France, in recognition of his scientific and cultural contributions to the city, and in 2011 he received a degree Honoris Causa (D.Eng.) from the University of Melbourne, Australia.

Professor Shiyi Chen (Peking University, China)



Shiyi Chen is the Dean of Graduate School and the founding Dean of the College of Engineering at Peking University, People's Republic of China. Prof. Chen has published more than 170 scientific papers, edited 3 books and has SCI citations in excess of 7000 times. Prof. Shiyi Chen's research contributions include the invention and development of the lattice Boltzmann method (LBM) for computational fluid dynamics. Chen and his colleagues, for the first time, derived the fluid mechanics equation based on the discrete Boltzmann equation and established the applicability of the method for industries, such as car design and enhanced oil recovery. Prof. Chen has made numerous contributions to fluid turbulence using direct numerical simulation and large eddy simulation with modern parallel computers. In particular, he co-developed the mapping closure theory for probability distributions of turbulence, discovered the mechanism of two-dimensional energy inverse cascade and established modified Kolmogorov similarities. Chen has led developing multiscale hybrid numerical methods for simulating fluid turbulence and micro- and nano-fluidics. For the latter, his approach is based on the coupling of Molecular Dynamics simulation and continuum fluid mechanics that can directly simulate fluid mechanics in small scales and resolve corner singularity and moving contact lines.

Second Symposium on Fluid-Structure-Sound Interactions and Control, 20-23 May 2013, Hong Kong and Macau

Monday, 20 May 2013

Time	Title	Authors	page
08:30-09:10	Registration		
09:10-09:30	Opening / welcome, PolyU Chiang Cheng Studio Theatre (Monday morning session only)		
	Session Chairs: I Marusic & Y Zhou		
09:30-10:15	Keynote: A Look at the Turbulent Wake using Scale-by-scale Energy Budgets, by RA Antonia, Newcastle, Australia		24
10:15-10:35	Turbulent Drag Reduction at High Reynolds Numbers [pn104]	Yongmann Chung , Edward Hurst (U of Warwick, UK)	26
10:35-10:55	Stability of a Spring-mounted Cantilevered Flexible Plate in a Uniform Flow [pn92]	R. M. Howell, Anthony Lucey (Curtin U of Tech, Australia)	28
10:55-11:15	Initial Flow Structure Control of Jet Diffusion by Using Coaxial Type DBD Plasma Actuator [pn28]	Motoaki Kimura , Jun Asakura, Masazumi Onishi, Kentaro Sayo (Nihon U, Japan)	30
11:15-11:25	Photo taking		
11:25-11:40	Tea break		
	Session Chairs: SB Leonov and D Sumner		
11:40-12:00	Effect of Polymer Additive on Turbulent Bulk Flow: The Polymer Concentration Dependence [pn63]	Hengdong Xi , Haitao Xu, Eberhard Bodenschatz (Max-Planck Institute, Germany)	32
12:00-12:20	Effect of Humpback Whale-Like Leading Edge Protuberances on the Low-Reynolds Number Airfoil Aerodynamics [pn72]	Mingming Zhang , G. F. Wang, J. Z. Xu (IET, CAS, China)	34
12:20-12:40	Active Control of Self-Excited Roll Oscillations of LAR Wings [pn111]	Zhijin Wang (HIT, China), T. Hu, I. Gursul	36
12:40-13:00	Flow Control for Vortex Shedding of a Circular Cylinder based on a Steady Suction Method [pn8]	Wenli Chen (Iowa State U, USA), Hui Hu, Hui Li	38
13:00-14:30	Lunch and Exhibition		
	Room N003, Session Chairs: R A Antonia & D Wood		
14:30-15:15	Keynote: The Swimming of Manta Rays, by AJ Smits, Princeton, USA		40
15:15-15:35	Active Flow Control over a Wind Model using Synthetic Jet Arrays [pn53]	Hui Tang , Jiaying Du, Yanhua Wu (NTU, Singapore)	42
15:35-15:55	Feedback Control of Flow-Induced Vibrations on head Gimbals Assembly inside Hard Disk Drives [pn23]	Xiaoyang Huang (NTU, Singapore), Hequn Min, Qide Zhang	44
15:55-16:15	Development of a Feedback Model for the Self-Excited Impinging Planar Jet [pn2]	David Arthurs, Samir Ziada (McMaster U, Canada)	45
16:15-16:35	Influence of Caudal Fin Elasticity on Swimmer Propulsion [pn4]	Michel Bergmann, Angelo Iollo (INRIA, France)	47
16:35-16:50	Tea break		

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16:50-17:05	The Wake Structure of Flow over a Finite Square Cylinder Predicted by Large Eddy Simulation [pn5]	Donald Bergstrom (U of Saskatchewan, Canada)	49	Flow around an Oscillating Airfoil with and without a Wavy-Leading Edge [pn90]	Shengjin Xu (Tsinghua U, China)	57	Research on the Protective Layer of the Wind Tunnel [pn7]	Sha Chen (SH Sheng Wang AE Co.,Ltd., China)	65
17:05-17:20	Pressure Fluctuations in the Vicinity of a Wall-Mounted Protuberance [pn12]	Abdelkader Frendi (U of Alabama in Huntsville, USA)	51	Modification of the Flow Structure over a Highly Swept Delta-Wing Using Dielectric Barrier Discharge Actuators [pn58]	Chihyung Wen (PolyU, Hong Kong)	59	The Study of Prediction Method on Propeller Broad-band Noise [pn9]	Yihong Chen (CSSRC, China)	66
17:20-17:35	The Numerical Simulation of Fluid-Structure Interaction on a Simple Cluster in an Axial Flow [pn37]	Zhengang Liu (PolyU, Hong Kong)	53	Galloping Stability Studies of Steel Box Hanger of Arch Bridge by CFD Numerical Simulation [pn68]	Hao Zhan (CRMBRDI, China)	61	Combined Spherical Nearfield Acoustic Holography and Sound Quality Analyses [pn26]	Jin, Jiangming (Zhejiang U of Tech, China)	68
17:35-17:50	Intermittency of Vortex Shedding in the Near Wake of a Finite-Length Square Prism [pn55]	Hanfeng Wang (Central South U, China)	55	Flow-Induced Vibrations of a Circular Cylinder Interacted with Another of Different Diameter [pn84]	Md. Mahub Alam (HIT, China)	63	A Class of High Order Compact Schemes with Good Spectral Resolution for Aeroacoustics [pn34]	Xuliang Liu (CARD, China)	70
Student Session Chair: D Sumner & AD Lucey			Student Session Chair: S Ziada & D Wood			Student Session Chair: L Huang & D Hodges			
17:50-18:05	Flow Around Two Circular Cylinders in a Tandem Arrangement [pn46]	Sundara Rajagopalan (U of Newcastle, Australia)	72	An Immersed Boundary Method for Simulating an Oscillating Airfoil [pn20]	Guotun Hu (BUAA, China)	82	Low-Frequency Noise Propagation from a Small Wind Turbine Tower [pn42]	David Wood (U of Calgary, Canada)	92
18:05-18:20	Respective Effects of Large-Scale Intermittency and Mean-Velocity Gradient on Turbulent Scaling-Range Exponents in a Square Jet [pn70]	Jianpeng Zhang (Peking U, China)	74	Eigen-Analysis of an Inviscid Channel Flow with a Finite Flexible Plate in One Wall [pn93]	Meagan Burke (Curtin U, Australia)	84	A New Acoustic Imaging Method for Duct Spinning Mode with Microphone Arrays [pn24]	Xun Huang (Peking U, China)	94
18:20-18:35	Open-and Closed-Loop Control of a Turbulent Round Jet based on Fluidic Means [pn73]	Pei Zhang (PolyU, Hong Kong)	76	The Effect of Localised Stiffening on the Stability of a Flexible Panel in Uniform Flow [pn95]	B.H. Tan (Curtin U, Australia)	86	Prediction of Flow-Induced Noise in Centrifugal Pumps based on a Combined CFD/CA method [pn49]	Qiaorui Si (Jiangsu U, China)	96
18:35-18:50	Strouhal Numbers of Unsteady Flow Structures around a Simplified Car Model [pn98]	Bingfu Zhang (PolyU, Hong Kong)	78	Instability of Flow Over a Simply Supported Plate [pn110]	Chao Zhang (HKU, Hong Kong)	88	A Three-Dimensional Semi-Analytical Model for the Prediction of Underwater Noise Generated by Offshore Pile Driving [pn89]	Apostolos Tsouvalas (Delft UT, Netherlands)	97
18:50-19:05	Orthogonal Wavelet Analysis of Flow Structures in Asymmetric Wakes [pn13]	Shun Fujimoto (Yamagata U, Japan)	80	Turbulent Intensity Effect on Low Reynolds Number Airfoil Wake [pn112]	Shu Wang (PolyU, Hong Kong)	90	Effect of Nozzle Lip Thickness on Co-flow Jet Characteristics [pn106]	T. Srinivasarao (JNT U, India)	99
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09:45-10:05	Characterization of Flow Disturbances Excited by SDBD Plasma Actuator [pn83]			Sergey Leonov (JIHT RAS,Russia)			103		
10:05-10:25	Streamwise Evolution of the Screen Cylinder Wake [pn78]			Tongming Zhou (UWA, Australia), A. M. Azmi, H. F. Wang, Y. Zhou, L. Cheng			105		
10:25-10:45	Control of Vortex-Structure Interaction Noise Generation on a Rod-Airfoil Configuration [pn32]			Yong Li , X. N. Wang, Z. W. Chen, D. J. Zhang (CARD C, China)			107		
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Room N003, Session Chairs: K Xu and S Ziada									
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11:20-11:40	Airfoil Flow Control using DBD Plasma Actuators [pn57]			Xunnian Wang , W.B.Wang, Y.Huang, Z.B.Huang, Z.H.Shen (CARD C, China)			111		
11:40-12:00	Towards the Numerical Modelling of Floating Offshore Renewables [pn54]			Axelle Vire (IC,UK), J. Xiang, M. D. Piggott, C. J. Cotter, J-P. Latham, C. C. Pain			113		
12:00-12:20	Flow above the Free End of a Surface-mounted Finite-height Cylinder [pn51]			N. Rostamy, D. Sumner , D. J. Bergstrom, J. D. Bugg (U of Saskatchewan,Canada)			115		
12:20-12:40	Recent Progress in Bluff-Body Flow Control [pn85]			Avraham Seifert , T. Shtendel (Tel Aviv U, Israel)			117		
12:40-13:00	Passive Morphing of Solar Powered Flying Wing Aircraft [pn105]			Pezhman Mardanpour, Dewey Hodges (Georgia Institute of Technology,USA)			118		
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Room N003 Session Chairs: T Kagawa & JC Mi									
14:15-15:00	Keynote: Triangular Tabs for Supersonic Jet Mixing Enhancement, by E Rathakrishnan, Indian Institute of Technology						120		
15:00-15:20	Comparison of the Near-Field Flow Structures of Free and Confined Triangular Jets [pn65]			Minyi Xu (Dalian Maritime U, China), Jianchun Mi, Pengfei Li, Jianpeng Zhang			122		
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15:35-15:50	Numerical Simulation of Vortex-induced Vibration of Side-By-Side Circular Cylinders [pn50]	Zhongdi Su (China Jiliang U, China)	126	On Suppression of Vortex-Induced Vibrations of a Marine Riser Conveying Fluid by means of Variation of the Convection Speed [pn96]	Andrei V. Metrikine (Delft U of Tech, Netherland)	134	Flow Field of Flapping Albatross-like Wing and Sound at Low Reynolds Number [pn102]	Sutthiphong Srigrarom (Glasgow U,UK)	142

15:50-16:05	Numerical Study on Vortex Induced Vibration of Three Cylinders in Equilateral-Triangular Arrangements [pn64]	Xu Feng (HIT, China)	128	Simultaneously Measured Vorticity and Passive Heat in a Cylinder Wake [pn100]	Huali Cao (HIT, China)	136			
16:05-16:20	Numerical Investigation on the Flow-Induced Oscillation of Two Elastic Circular Cylinders in Tandem [pn69]	Hongjun Zhang (China Jiliang U, China)	130	Eulerian/Lagrangian Sharp Interface Schemes for Multimaterials [pn40]	A. Iollo (U of Bordeaux,France)	138			
16:20-16:35	Tea break								
Time	Fluid Chairs: Y Li & HJ Zhang	Authors		Exp. Chairs: CY Wen & A Rinoshika	Authors		FIV Chairs: HD Xi & HF Wang	Authors	
16:35-16:50	Wall-Pressure Fluctuations of Separated and Reattaching Flow over Blunt Plate Subjected to Incident Vortex Street [pn36]	Qingshan Zhang (Shanghai Jiaotong U, China)	144	Streaky Structures in a Controlled Turbulent Boundary Layer [pn108]	Honglei Bai (HIT, China)	150	Suboptimal Control of Wall Turbulence with Moving Dimples [pn22]	Weixi Huang (Tsinghua U,China)	156
16:50-17:05	POD study of a Turbulent Boundary Layer over a Rough Forward-Facing Step [pn62]	Yanhua Wu (NTU, Singapore)	146	Reynolds Number Effect on Flow Classification behind Two Staggered Cylinders [pn99]	Chi Wai Wong (HIT, China)	152	Static Aeroelastic Studies on a High Aspect Ratio Airplane [pn75]	Shujun Zhang (CARDC, China)	158
17:05-17:20	Self-Excited Oscillations of Two Opposing Planar Jets [pn17]	Samir Ziada (McMaster U, Canada)	148	Measuring Unsteady Flow With Bi-directional Holographic Interferometry [pn16]	Longde Guo (CARDC, China)	154			
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	Room N003 Session Chairs: XN Wang & Y Liu								
17:35-18:20	Keynote: The Constrained Large Eddy Simulation for Aerodynamics by SY Chen, Peking Univ., China								160
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09:35-09:55	Vortex-Induced Mixing at 3-Phase Contact Line [pn27]	Tae-HongKim1,Hyungsoo Kim,SeunghoKim1 and Ho-Young Kim (Seoul Natl U, Korea)	164
09:55-10:15	Sound Generated by a Wing with a Flap Interacting with a Passing Vortex [pn39]	Avshalom Manela, Lixi Huang (HKU, Hong Kong)	166
10:15-10:35	On the Flow and Noise of a Two-dimensional Step Element in a Turbulent Boundary Layer [pn82]	Danielle J. Moreau , Jesse Coombs, Con J. Doolan (The U of Adelaide, Australia)	168
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Macau Westin, Session Chairs: F Anselmet & S Ziada			
10:50-11:10	A Temporal and Spectral Quantification of the 'Crackle' Component in Supersonic Jet Noise [pn3]	Woutijn Barrs,Charles E. Tinney (UT Austin, USA)	170
11:10-11:30	Modes of Noise Sources around a Leading Edge Slat and the feature with Angle of Attack [pn6]	Peng Chen , Xunnian Wang, Yuchang Wen (CARD C, China)	172
11:30-11:50	Controlling the Acoustic Resonance in a Corrugated Flow Pipe [pn1]	M. Amielh, F. Anselmet (IRPHE, France), Y. Jiang, U. Kristiansen, P. O. Mattei, D. Mazzoni	174
11:50-12:10	Startor-vane-based Active Control of Turbofan Engine Noise [pn107]	Igor Vinogradov (HIT, China), Y. Zhou	176
12:10-12:30	Three-dimensional Wavelet Multi-resolution Analysis of Flow Structures behind a Vehicle External Mirror [pn48]	Akira Rinoshika , Yan Zhang (Yamagata U,Japan)	178
12:30-12:50	Numerical and experimental investigation of thermoacoustic instability in a T-shaped system [pn113]	S. H. Li and Dan Zhao (NTU,Singapore)	180
12:50-13:00	Student Paper Awards & Closing Ceremony		
13:00-14:15	Lunch		
14:15	Depart for Hong Kong		