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The cover photo：Courtesy of the Mainichi Newspapers

January 2012

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News Letter Number 07 Special Issue | Post Conference Report

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Tohoku University Global COE Program

Eighth International Conference on Flow Dynamics

November 9-11, 2011
Hotel Metropolitan Sendai, Sendai, Japan

Photo：Courtesy the Mainichi Newspapers

The Great East Japan Earthquake

- 14:46, March 11, 2011
- Size (Richter Scale): M9.0 ▶ Maximum Seismic Intensity: 7 ▶ Total area flooded by tsunami: 561km^2
- Aftershocks: 5 M7+ ／ 82 M6+ ／ 502 M5.0+ ／ 170 Level 4+ (seismic intensity)(as of June 8)
- The number of deaths is 15,782, the number of missing is 4,086 (as of September 11)
- Totally destroyed115,163buildings ／ Substantially destroyed162,015buildings ／ Fully or partially destroyed284buildings ／ Inundation above floor level11,576buildings ／ Inundation below floor level13,649buildings ／ Partly destroyed559,321buildings (as of September 11)

The damage situation of Tohoku University

- Fatalities：3 students (died off-campus in tsunami)
- Damage to buildings: Dangerous 28 buildings (4.7%) ／ Caution needed 48 buildings (8.2%) ／ Safe 521 buildings (87.1%) ／ Reconstruction-repair costs: approx. 44.8 billion yen
- Damage to facilities：approx. 35.2 billion yen
- Damage to student residences：students whose residence was completely destroyed/partially damaged 526; students considering moving 331
- Lifeline utilities : electricity, water, gas, disconnected for a long period
- Many valuable cells/samples were lost in biology research labs (deep freezer stopped due to electric power outage)

Photo：Courtesy the Mainichi Newspapers

We will overcome

-ICFD as the Symbol of Regeneration and Reconstruction from the Disaster-

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The Road to Recovery

- Recovery of lifeline utilities
  electricity - April 4, water - April 13, gas - April 26
- Resumption of public transportation
  Bus - March 14, Subway - March 13, Bullet train - April 25, Flights - April 13
  (returned to pre-disaster timetable from July 25)
- Recommencement of educational affairs
  Graduate / undergraduate lectures resumed - April 25
  Entrance ceremonies conducted individually by each department - May 6
  Common Education lectures commenced - May 9
- Damage to facilities (approx. 35.2 billion yen) Majority of costs expected to be covered by the government's first supplementary budget
- Damage to buildings (approx. 44.8 billion yen) Requesting funding from the government's supplementary budget
- Support for students whose residence was damaged
  Provision of rooms at dormitories, construction of temporary accommodation
- Provision of emergency support scholarships for students affected by the disaster

The effect of radiation from the Fukushima Daiichi nuclear power plant accident

Sendai city is outside 80 km radius of the Fukushima nuclear facility.
The current amount of radiation
in Sendai is below the world average(2.4mSv/year).

Tohoku University's Strength Displayed in the Disaster

- Disseminating information as an earthquake expert
- Maintaining healthcare for the region - Tohoku University Hospital
- Carrying out activities handling radiation as experts
- Providing robot engineering technology
- Student vitality and dedication - volunteer activities in the disaster areas
- Disseminating and archiving information on the disaster

April, 2011
Katahira Campus

May, 2011
Kawauchi Campus

June, 2011
Kawauchi Campus

November, 2011
Campus festival

Keisuke Asai

Professor, Graduate School of Engineering, Tohoku University
Chair of ICFD2011:The 8th International Conference on Flow Dynamics

Ganbarou—"Go Forward Together!" is Our Motto
The Number of Participants Was the Same Level as the Previous Year Despite the Quake Aftermath

Decision to hold ICFD2011 made two weeks after March11
Over 600 in-advance applications received

Organizing Committee members gathered two weeks after the quake and decided to hold the conference immediately. We then announced our strong will to host ICFD2011 on the website of the global COE program. At first we expected to have 350 participants but ultimately we had 650, the same level as ICFD2010. We are grateful that there were many participants from overseas too. I think the people recognized the significance of holding the conference in Sendai located in the disaster-hit Tohoku region.

Offering an ideal opportunity for international exchange among students and young researchers

Vigorous participation by students and young researchers is a hallmark of ICFD. One example is a student session planned and run by students. That includes a reception, an evening event prior to the conference, to promote exchanges with students from overseas. Exchanging opinions with people from different social environments and cultures helps develop communication skills. As part of the global COE program, young researchers also have opportunities to visit research institutions overseas, such as INSA Lyon in France and universities in the U.S.

Tackling global environmental and energy issues from our experience in Sendai

The symbol of ICFD2011 is the national flag of Japan with the phrases "Ganbarou, Japan. Ganbarou, Tohoku." Since the Japanese word "ganbarou" is difficult to translate into English, we expressed the word phonetically, using the alphabet. Some people translate "ganbarou" as "Never give up," but I think "Go forward together" catches its spirit most. It expresses our strong will to collaborate and find solutions to global environmental and energy issues. The important thing is to send out this message from disaster-stricken Sendai to the world.

Session in memory of late Dr. Hiroshi Higuchi Date Bushotai joined the banquet

In the evening of the second day, ICFD2011 held a memorial session in honor of late Dr. Hiroshi Higuchi, who was a professor at the L.C Smith College of Engineering and Computer Science at Syracuse University, New York. Dr. Higuchi, until he passed away in November 2010, was deeply involved in the activities of our global COE program. The memorial session was organized to express our appreciation of his contribution and to share this sentiment with many people. Date Bushotai, a group of entertainers in samurai costume, appeared at the evening banquet on the second day. Their yell conveyed our spirit "go forward together" to the participants.

Eighth International Conference on Flow Dynamics (ICFD2011)

November 9-11, 2011 Hotel Metropolitan Sendai, Sendai, Japan

Program

Wednesday, November 9, 2011

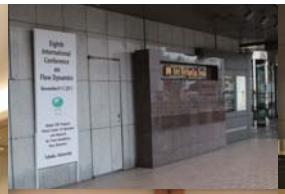
Opening Address
Plenary Lectures
GS1: General Session
OS5: Research Frontiers in Green Hybrid Rocket Propulsion
OS6: Aerodynamics for Mars Exploration Aerial Vehicle
OS7: Thermal-Fluid Flows and Plasma Physics
OS8: Flow-induced Degradations in Piping Systems of Nuclear Power Plants
OS9: Fluid-induced Seismicity: Modeling and Application
OS12: The Seventh International Students/Young Birds Seminar on Multi-Scale Flow
OS13: Clean and Efficient Combustion Technology (AFI/TFI-2011)

Thursday, November 10, 2011

Plenary Lectures
GS1: General Session
OS1: Next-Generation CFD
OS2: Advanced Control of Smart Fluids and Fluid Flows
OS3: Wind Tunnel Experiment on Unsteady Phenomena
OS5: Research Frontiers in Green Hybrid Rocket Propulsion
OS7: Thermal-Fluid Flows and Plasma Physics
OS11: Micro Channels and Membrane Proteins
OS12: The Seventh International Students/Young Birds Seminar on Multi-Scale Flow
PS1: IFS Collaborative Research Forum (AFI/TFI-2011)
PS3: Plasma Medicine and Cell Engineering
PS4: The 12th Japan-Korea Students' Symposium New Energy Flow for Sustainable Society
-Properties and Applications of Energy Materials-
Special Session: Memorial Session for the Late Professor Higuchi, Syracuse University, USA

Friday, November 11, 2011

GS1: General Session
OS4: Research Frontiers in Green Aviation
OS10: Biofluid for Medical Application
OS12: The Seventh International Students/Young Birds Seminar on Multi-Scale Flow
PS2: 5th Functionality DEsign of the COntact Dynamics:(DECO2011)
PS3: Plasma Medicine and Cell Engineering
PS4: The 12th Japan-Korea Students' Symposium New Energy Flow for Sustainable Society
-Properties and Applications of Energy Materials-



Wu-Shung Fu

Professor,National Chiao Tung University

A Great Forum for Researchers and Students

I studied for my MSc and PhD at the Institute of High Speed Mechanics of Tohoku University from 1978 to 1984, and subsequently I have worked at National Chiao Tung University for 27 years. Professor Maruyama is a good friend and we studied together in the Institute of High Speed Mechanics for six years. Not only did the similarity of our research fields lead us to share ideas but we also often participated in recreational activities together.

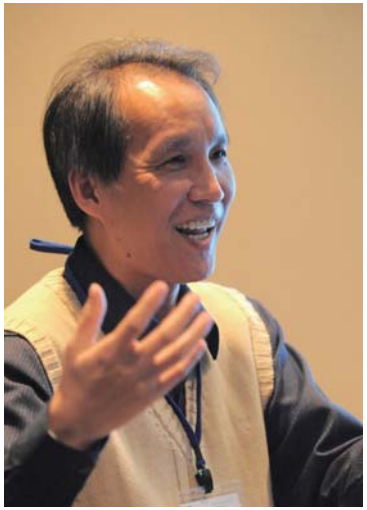
In the session in which I participated, nineteen papers were submitted, including several from researchers at National Chiao Tung University. Moreover, four professors and more than ten students from National Chiao Tung University attended the 8th ICFD in Sendai. I hope this annual conference will be held far into the future. It is a great forum where researchers and students from Japan and around the world present their work and cultivate fruitful relationships transcending borders.

Japan-Taiwan Scientific Exchange

Ching-Yao Chen

Professor,National Chiao Tung University

Promoting Japan-Taiwan Cooperation



This is my first experience of helping to organize a conference session. The first challenge was to attract contributors from around the world. This year, most papers for my session are from Taiwan, India and Japan. I'd like to see more papers from America, Europe and elsewhere. We should aim to increase the diversity of contributions.

Tohoku University is strong in flow dynamics. As flow dynamics is my field, it's an honor to participate in this meeting. I enjoy being an organizer but it's challenging.

I first became interested in attending this conference because one of my colleagues, Professor Wu-Shung Fu, is an alumnus of Tohoku University. I also noticed that the conference includes a special session for students. Because I'm involved in the international affairs of my school, I was eager to bring many students here to participate in the student session. I hope this will develop into a continuing exchange program between Japan and Taiwan, and also Korea.

This conference is a wonderful experience for our students. Japan is among the countries they most want to visit and it is close to Taiwan. So I think this conference is a great opportunity to enhance cooperation between Japan, Taiwan, and Korea, and I would like to see National Chiao Tung University enthusiastically involved in the exchanges.

I visited Sendai last year. Sendai is a very attractive city and I find it delightful. It is difficult to imagine that this city was struck by disaster so recently. Sendai's beauty seems undiminished.

Yun Huang

National Chiao Tung University

Fostering Constructive Interaction Worldwide

This is the second time I have participated in this conference. My supervisor graduated from Tohoku University, so I had heard a lot about the university. This conference is among the most impressive I have ever attended. It fosters constructive interaction among scholars and students worldwide. The students of Tohoku University are open-minded and warmly welcome their counterparts from abroad.

At the conference, I encountered many stimulating ideas relevant to my research. The experience will help me overcome my shortcoming and enhance my knowledge of fluid science.

I hope the conference will continue to flourish for many years to come. The enthusiasm of the Japanese students will encourage me to devote myself to research and aim high.

Besides, Sendai is a charming city with lots of trees. The autumn leaves are so beautiful and the weather is comfortable for living.

The Center of Flow Dynamics in Sendai

Shigenao Maruyama
Distinguished Professor, Tohoku University
Program Leader of Tohoku University Global COE Program:
World Center of Education and Research for Trans-disciplinary Flow Dynamics

It is already 8th International Conference on Flow Dynamics and the conference held in Sendai has been firmly rooted . Because of the Great East Japan Earthquake, we expected that the number of participant would decrease to about 350 people, however, as a result, we welcomed over 600 people this time.

Among them, 200 people are overseas attendees. Many people are first time attendees, and attendee's community has been spreading year by year. I proudly say that people in the world gradually know the fact that Sendai is a center of flow dynamics and if you come to Sendai, you can find something interesting.
In particular, student attendees not from overseas but also domestic students are increasing. It is regarded that you can join international conference without going abroad and exchange information with the researchers around the world. Flow dynamics has characteristics that its academic domain is very wide and has academic variety.

This international conference was started as one of the Global COE (Center of Excellence) activities. However, after March 2013, when Global COE program ends, Institute of Fluid Science, Tohoku University will host this conference.
I am expecting that after the conference, attendees speak out "Tohoku University is not contaminated by radiation," "Tohoku University has been revived from the Great East Japan Earthquake" so that high-level researchers and students come together to Sendai, Japan.








History of the

International Conference on Flow Dynamics

	Participants	Presentations	Sessions	Conference venue
ICFD2004 November 11-12th	370(67) General 279(57) Student 91(10)	112(25)	OS 8	Sendai International Center
ICFD2005 November 16-18th	563(100) General 311(81) Student 252(19)	299(58)	OS 10	Sendai International Center
ICFD2006 November 7-9th	229(60) General 168(35) Student 61(25)	129(51)	OS 7	Hotel Matsushima Taikanso
ICFD2007 September 26-28th	412(150) General 232(86) Student 180(64)	303(138)	OS 7 SS 1	Sendai International Center
ICFD2008 November 17-19th	346(108) General 147(57) Student 199(51)	154(86)	OS 10	Sendai Excel Hotel Tokyu
ICFD2009 November 4-6th	448(157) General 213(74) Student 235(83)	319(145)	GS 1 OS 11	Hotel Metropolitan Sendai
ICFD2010 November 1-3th	749(241) General 404(126) Student 345(115)	412(180)	GS 1 OS 7 PS 6	Sendai International Center
ICFD2011 November 9-11th	649(206) General321(104) Student328(102)	417(156)	GS 1 OS 13 PS 4 SS 1	Hotel Metropolitan Sendai

※ Figures in parentheses are numbers of non-Japanese.

Plenary Lectures



Suk Ho Chung

Professor,Clean Combustion Research Center, King Abdullah University of Science and Technology

Energy Sustainability: A Combustion Perspective

Combustion is one of the key themes associated with the energy and environmental issues related to air pollution, global warming, and climate change. Worldwide, over 80% of energy is consumed through combustion processes for energy conversion from fossil fuels whose depletion is a growing concern. Although alternative energy sources, including renewables, are available, combustion will have an important bearing on sustainability over the next several decades.

One of the near-term solutions for the energy and environmental issues is to increase the efficiency of internal combustion engines and reduce their emissions. The understanding of combustion science has progressed significantly during the last 30 years thanks to advances in supercomputing and chemical kinetic mechanisms.

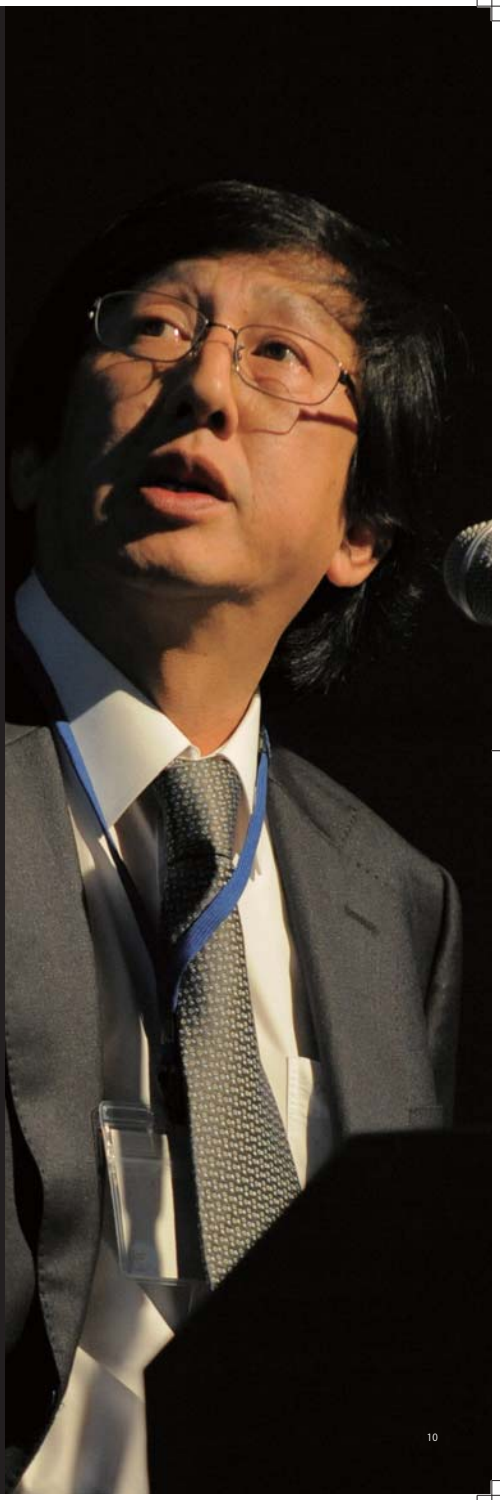
For further study of combustion phenomena, it is important to clarify autoignition behavior and emission characteristics of soot and NOx of fuels. Autoignition is an ignition mode of diesel engines and is an efficiency limiting factor for gasoline engines and a controlling factor for low-temperature concept engines and premixed-charge compression ignition (PCCI) engines.

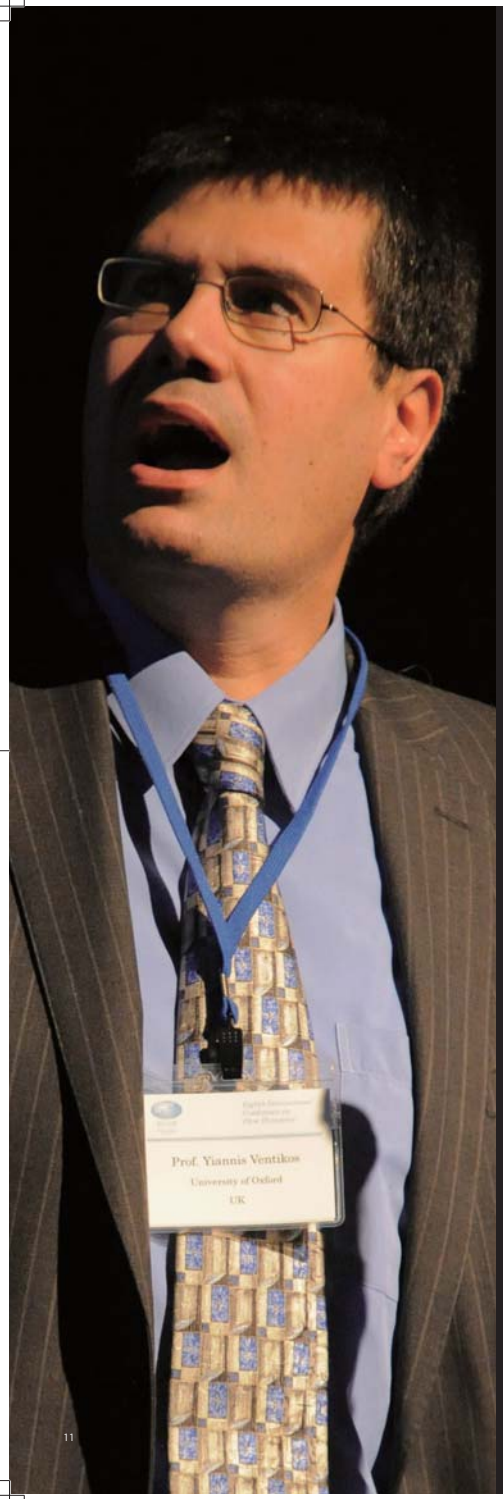
Soot formation is one of the most complex phenomena involving gas-phase kinetics, particle inception, surface growth, aerosol dynamics and oxidation and also involves various chemical species, and thus fuel constituents are important.

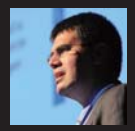
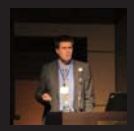
Binary mixtures of n-heptane/toluene and iso-octane/toluene have been investigated in counterflow diffusion flames to test soot behavior of gasoline surrogate fuels. Laser-induced incandescence and fluorescence techniques were employed for soot volume fraction and polycyclic aromatic hydrocarbon (PAH) concentrations. Certain mixture fuels exhibited higher PAH concentrations compared to toluene. The result of the investigation of the soot volume fraction implies tolerance of toluene in soot formation. Toluene is used as an octane booster in gasoline fuels.

A new kinetic mechanism has been proposed, which can successfully predict PAH formation behavior for various diffusion flames of gasoline surrogate fuels.

Autoignition behavior of fuel jets has been studied in coflow air at elevated temperature. At a temperature higher than a certain ignition temperature, the jet was autoignited and stabilized as a lifted flame. Near the blowout condition, a critical autoignition was observed, having repetitive extinction and reignition. This process can be explained based on the effect of buoyancy. The ignition delay times calculated from various existing kinetic mechanisms vary in the temperature range tested. Accurate kinetic mechanism should be developed in the future.





Yiannis Ventikos

Professor,Institute of Biomedical Engineering and Department of Engineering Science, University of Oxford

Transport Phenomena, Fluid Mechanics and Multiscale Modeling Techniques for Clinical Decision Support

Transport phenomena are dominant in human physiology and pathophysiology, and therefore, biological fluid mechanics, or biofluids, have received attention in both the engineering and the medical communities. The use of computer models in biomedical engineering has grown substantially, but only recently have such techniques found their way into the clinical setting. We present concepts and methodologies, at different stages of maturity, that promise to address unmet clinical needs and facilitate diagnosis, treatment planning and prognosis.

Firstly, we discuss cerebral aneurysms, a focal disease of the vascular system, from two perspectives: 1) evaluation of rupture risk using growth and remodeling simulation concepts and 2) interventional planning via the simulation of implanted flow diverter performance.

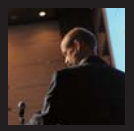
So far, the decision on intervention or follow-up has been based almost exclusively on statistical measures of the geometric features, an approach that has repeatedly proven inadequate. This need for more rational decision making has led to the development of sophisticated computational frameworks. Such techniques bring together high-specificity CFD computations of blood flow, high-accuracy computation of deformations of the vascular wall under fluid forces, and sophisticated remodeling concepts that account for fiber deposition, degradation and crosslinking—thus allowing for the development of constitutive relationships concerning the vascular wall.

Regarding interventional devices design and optimization, it is becoming clear that the specifics of the implant and its positioning must match the particular aneurysm to be treated. Computational simulation is currently the only viable way to help interventionists decide on the appropriate device (for example, flow diverter) for each individual aneurysm, and how it should be positioned. The spatial scale discrepancy involved in such configurations results in substantial requirements regarding resolution and appropriate grid generation techniques become important.

Finally, a newly developed multicompartmental poroelasticity model is discussed, which is used for the evaluation of transport of cerebrospinal fluid (CSF) and blood in the entire brain. This technique, applied for a paradoxical brain ailment called normal pressure hydrocephalus, showed that such a multiscalar model can account for both macroscopic and microscopic interactions. It is found that combinations of microscopic effects, such as stiffening of vessels and increased leakiness of capillaries, can result in clinically relevant ventricular enlargement or other macroscopic effects.

As computational models mature, we expect to see an ever increasing penetration of such techniques in the clinic.





Mark Drela

Professor,MIT Aeronautics and Astronautics, Cambridge

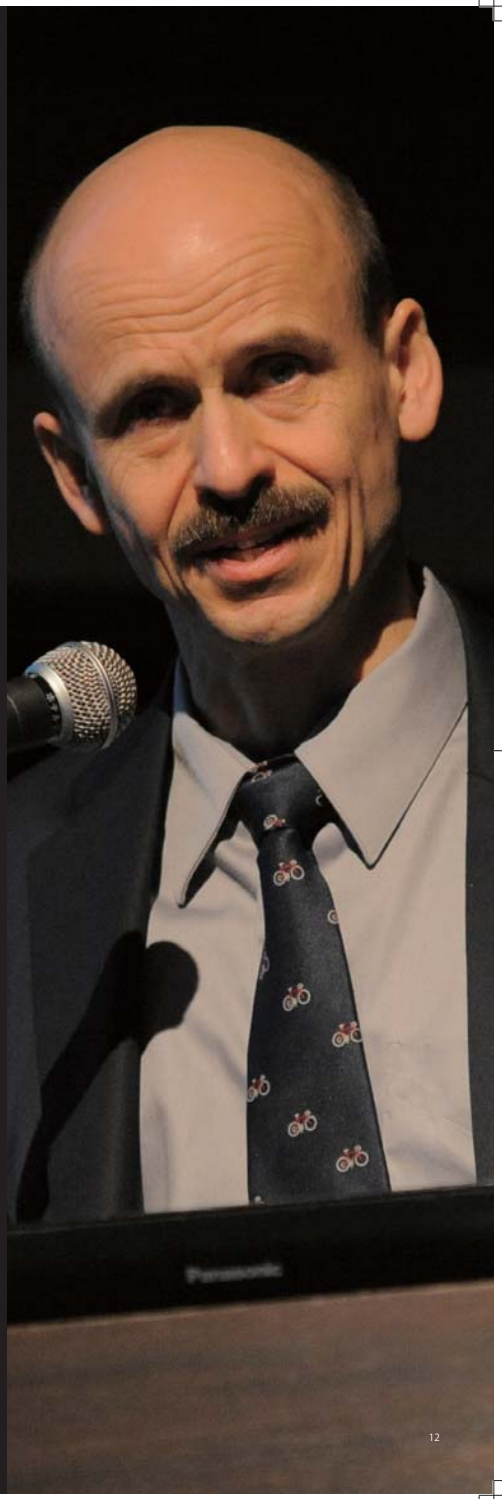
Low-Order Aeromechanical Modeling for Conceptual Design of Fuel-Efficient Aircraft

Fuel efficiency is one of the most important design considerations for modern transport aircraft, for reasons of operating cost and low emissions. Because fuel burn depends on many competing drivers, effective conceptual transport aircraft design must address the key features of all the disciplines involved. As a minimum, the airframe structure and weights, the aerodynamic performance, the propulsion performance, and the flight trajectory must all be represented with sufficient fidelity. Many conceptual design formulations have been developed. Most of these methods have relied on historical correlations for estimating weight, drag, and engine performance, so that they are reliable only for conventional configurations and engine parameters. Recently there has been interest in unconventional configurations such as the Strut-Braced Wing (SBW), the Blended Wing Body (BWB), and the D8 concept. The traditional correlation-based conceptual design formulations are not reliable for the evaluation and optimization of these configurations. Instead, methods based more on physics rather than correlations are required. The presentation outlines the modeling techniques and calculation methods used by these physics-based methods, with specific examples drawn from the TASOPT methodology.

The physical models in TASOPT can be summarized as follows: beam and pressure-vessel theory for primary-structure sizing and weight prediction, variable wing airfoils and viscous/inviscid CFD for all profile drag prediction, full engine flowpath simulation, and variable flight trajectory.

These models do not use historical primary-structure weight correlations, wetted-area drag prediction methods, engine lookup tables or correlations, or fixed climb and cruise profiles. Hence they are expected to be reliable for unconventional configurations, or for evaluating the influence of unusual aircraft parameter or technology combinations for which historical data does not exist.

Demonstrated are the importance of using sound physical modeling of the component disciplines for obtaining an effective and realistic conceptual design and the importance of using global optimization spanning all the disciplines for obtaining the true minimum-fuel design which meets all operating constraints. The power of physics-based conceptual design goes beyond obtaining an optimum design. Also shown is the computed dependence of fuel burn on various technology parameters such as material strength/weight, engine metal temperature and overall pressure ratio, and skin-friction reduction via riblets or laminar flow. Evaluation of a few novel configurations is also presented, such as the D8 concept developed for the NASA N+3 program.



Conference Open to Young Researchers

Philippe Kapsa

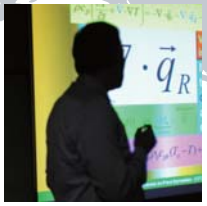
Professor,Ecole Centrale de Lyon

This conference is different from most other conferences. In addition to plenary sessions and normal presentations, it has special sessions devoted to young researchers and students, which make this conference unique and very interesting. As a member of the Scientific Committee of the conference, I believe this aspect, that is, the involvement of young researchers and students, is important and should be emphasized. It would be good to organize, for example, poster awards or best presentation awards, in order to enhance the attractiveness of the conference. Personally speaking, I would like the conference to raise the profile of tribology, the field in which I am specialized. Tribology is not the mainstream subject of the conference but is important.

What I expect from young researchers is that they conduct good research with an eye to the future and achieve interesting results. It is increasingly evident that computers are becoming the center of people's lives. The problem is that, when people become overly reliant on computers, they lose contact with reality. The problem is the same in Japan and in France. Young peoples spend too much time working with computers and they lose their grasp of reality, lose their contact with materials. What we have to do is to try to restore the "social" aspects of research, making more contacts with other people. Of course we need to use computers but we must not forget to think without using computers. Rather than solely depending on computers, young researchers need more interaction with other people. Now, you send an e-mail when you have something to say to people ten meters away. It's much better to go and directly speak with people. We mustn't lose this.

This conference is a great opportunity for young researchers to get to know other researchers. There is a session for young researchers, which is organized by students, with a party in the evening. What is important is not only to do good work, but also to explain your findings to other people, to exchange ideas and get their opinions.

Regarding the earthquake and tsunami of March 11, I am impressed by the quick recovery of Sendai. We saw little remains of the damage except walls with cracks. We visited Matsushima and it was difficult to imagine that the place was hit by a tsunami. Sendai is about 80 kilometers from Fukushima Daiichi. My home, including my laboratory in Lyon, is only 60 kilometers from a nuclear power plant. If a similar nuclear accident happened, it would be a disaster for Lyon. We have many nuclear power plants in France, maybe too many. I hope we don't have a similar disaster in France. People tend to forget where the electricity we need to sustain our smart, pleasant lifestyles is produced. We must prevent nuclear contamination and it is crucial to develop alternative energy sources. It's important to conduct research on energy economics in order to reduce energy consumption.



Attract Young Researchers from Developing Countries

Subhash C. Mishra

Professor,Indian Institute of Technology Guwahati

ICFD is a well-organized, high profile conference series. With a positive outlook, whatever we do, there is always a scope for improvement. I say it in a different way, "the glass is always half full". This conference series has to keep on improving, and in all aspects it has to continue setting its own benchmark. And, this is what is seen over the years. This is evident from the increased number of participants in ICFD 2011 from Japan in general and the other countries, in particular. Despite the natural disaster earlier this year, people still have so much confidence in Japan, the people of Sendai, and everyone at Tohoku University that against the prevailing wrong notions that may be in their respective countries, the scientific community gathered for the ICFD2011 in Sendai, to became the ambassadors of the spirit of Japan and its people. ICFD series is a good platform to have interactions with the participants from all over the world.

The publicity of this conference is good but could be improved to attract more participants, including students, young researchers and eminent scientists from different parts of the world. This conference is not only for professors but also for students at different levels, including undergraduates. We should encourage undergraduate students to participate in the conference. If students are encouraged and motivated in their youth, they will pursue research enthusiastically. So my suggestion is to have several awards corresponding to the diverse participants, such as best paper award and best presenter award. It is also essential to attract more scientists from developing countries as science, which encourages harmony and brotherhood, is needed everywhere.

Throughout the world, the quality of students and their commitments are not what they used to be. Because students will be future leaders, they should be encouraged to get involved in research and derive pleasure from the pursuit of knowledge. Undergraduate students participating in this ICFD series will meet various researchers and will be motivated to pursue postgraduate studies. It's important that intelligent students gravitate to science rather than doing work that numerous others not trained in science and technology can do. Many fundamental problems in society can only be solved through science.

This is my third visit to Japan. I am not surprised that everything appears to be normal so soon after the devastating earthquake and tsunami. This is Japan!

I'm very sorry about the loss of life and property due to the natural disaster. One of my students was here in Sendai when the earthquake struck and from him and other people, I knew the reality, which was not necessarily fully reflected in the mass media.

Yasutomo Shimizu

Tohoku University

The Experience of ICFD is Useful after Getting Job

I was assigned the organizer of Student Session this time. I was assigned sub-organizer last year, and, it was the first time to organize the session entirely.

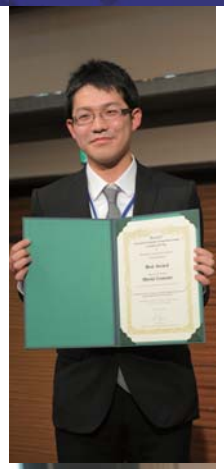
I could work smoothly because I was advised by the past seniors and my experience of sub-organizer last year. Regarding this operation, I really appreciate the support and cooperation from faculties, staffs, and members of the laboratory.

I think it would be useful after graduating my Ph.D. course because I could learn the organizational operation and the management through this experience. I really got a good opportunity.

This project has given wonderful opportunities to students and young researchers since the GCOE program was adopted. I hope we can continue in the future.

Because of the Great East Japan Earthquake, we were obliged to stop our researches, however, now we can work properly. I greatly appreciate your kindness and support.

All the past organizers of Student Session



Hiroki Gounome

Tohoku University

At wining Best Award: Pressure on English Oral Presentation

Here I thank you to be presented honorary Best Award.

It is my first experience to join such international conference and I was nervous to do the oral presentation in English though, I am confident myself as I was presented such a prize.

I am working at Prof Shigenao Maruyama's Lab and studying about the radiation. In our laboratory, there are four same-year students among which three of them are international students, so I am in the environment to get international sense in a daily life. In such an environment, I will acquire international experience more, so that I would like to be able to do understandable presentation in international conventions and meetings.

Some of the conventions are cancelled because of the Great East Japan Earthquake, however, ICFD was held as usual. I thank you for the people to hold ICFD in such a situation.

Karl Håkansson

KTH, Royal Institute of Technology

Courageous Decision to Host Conference at This Time

This is my first visit to Japan. I thought I was going to see a lot of destruction but so far I haven't seen anything like that. And I think it is courageous to host this conference even though you experienced this dreadful disaster. That is also why I think people want to come here and show their support for your decision to go ahead with the conference. It's inspiring.

Attending the ICFD 2011 was a very valuable experience and I gained a lot of knowledge. I heard many interesting talks and met talented researchers with whom I had rewarding discussions. Giving the oral presentation at the student session was a challenge, since I am used to giving longer presentations. The interaction with people who asked questions made my think about what I have been doing and why.

Sendai is a pleasant city. It's just the right size for walking around. There are streets with lots of temples and restaurants, and people are very friendly.

Jun Cheng

Nanjing University of Aeronautics & Astronautics

Wide-ranging Research Themes

I participated in ICFD's student session. As ICFD is a large conference in which many professors from various countries participate, it touches on wide-ranging research themes. The conference is a great opportunity to discuss and exchange ideas with other researchers and professors. It is a valuable occasion for us students to broaden our horizons. Through participation in this conference, I am able to encounter new ideas. Sometimes I derive inspiration from the seemingly casual remarks made by professors in their presentations. It' s impossible to have such an experience if you only stay in the lab.

I used to live in Sendai for six months a couple of years ago. I don't see much difference since the earthquake. It's amazing how quickly people have restored a sense of normality to their way of life.

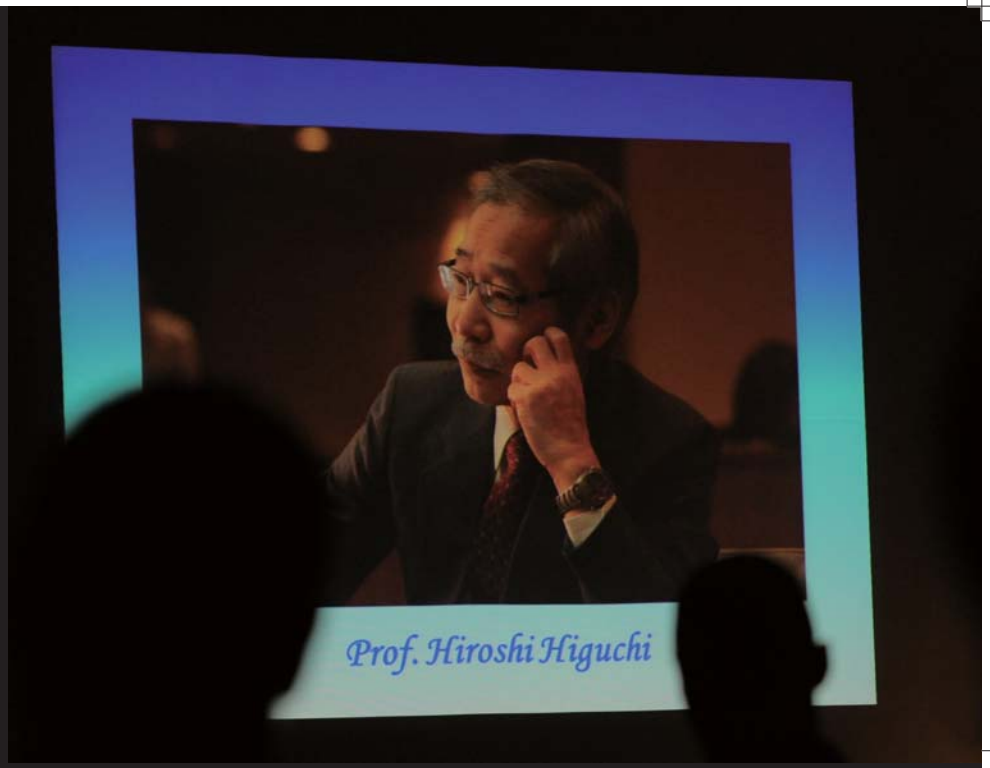
Prof.Hiroshi Higuchi Memorial Session

Professor Hiroshi Higuchi of Syracuse University passed away on November 22, 2010. His gentle smile and wit still remain a nice memory. During the 35 years of his professorship at Syracuse University, he also served as a professor of the Institute of Fluid Science, Tohoku University from 1999 to 2001. After Prof. Higuchi returned to Syracuse, a close relationship developed between Tohoku University and Syracuse University with many professors and students visiting each other and collaborating on research. Prof. Higuchi was instrumental in the establishment of the Liaison Offices in Tohoku and Syracuse Universities, the International Symposium of Advanced Fluid Information and the International Conference of Flow Dynamics. In memory of Prof. Higuchi's contribution to international exchange between Tohoku University, Syracuse University, and other institutions, Special Session: Memorial Session for the Late Professor Hiroshi Higuchi was held at this year's conference.

Milestones in the life of Prof.Higuchi

1970 BS from the University of Tokyo
1971 MS from the California Institute of Technology
1977 Ph. D. from the California Institute of Technology
1976 Research fellow of the NASA Ames Research Center
1981 Assistant Professor of University of Minnesota
1989 Associate Professor of Aerospace and Mechanical Engineering at Syracuse University
1996 Professor of Aerospace and Mechanical Engineering at Syracuse University
1999 Professor at the Institute of Fluid Science, Tohoku University
2001

He was a member of APS, ASME and an Associate Fellow of AIAA. He had received a NASA Space Act Award and a NASA New Technology Development Award.



Toshiyuki Hayase

Professor,Director of IFS,Tohoku University

Contribution to Develop International Exchange of Tohoku University and Institute of Fluid Science

Prof Hiroshi Higuchi was a calm gentleman with a full of wit and humor. He had a lot of hobbies, such as playing the cello as a member of the local symphony orchestra in Syracuse, piloting a private airplane, etc.

Prof Higuchi had been a professor of the Institute of Fluid Science, Tohoku University though 1999 to 2001. After he came back to Syracuse he had been done diligent effort for developing international exchange between Syracuse University and Tohoku University. He traveled between US and Japan many times in order to accomplish Inter-University Exchange Agreement between Tohoku University and Syracuse University and opening liaison office in each side.

Prof Higuchi also made a lot of effort to encourage students and young researchers in both institutes to exchange. As the result of such activities many joint-researches have been done.

I believe Prof Higuchi is wishing the Institute of Fluid Science will become the world center of fluid science.

Mark Glauser

Professor,Syracuse University

Great Physical Insight into Complex Problems

Professor Higuchi was a wonderful man who loved airplanes and classical music. He was an accomplished pilot and musician. Professor Higuchi was a brilliant aerodynamicist and a careful experimentalist whom I had the privilege of working with for over 10 years. We have a joint patent and several co-authored publications together. In fact, we presented a co-authored APS presentation in Long Beach California the same day he passed away. We miss Professor Higuchi a great deal at Syracuse. He was a great colleague and the students very much enjoyed working with him. He was one of the world's experts on flows around bluff bodies. Professor Higuchi had great physical insight into these complex problems and was able to relay it to his colleagues and students in a clear and concise manner. He was a great professor.

He certainly loved Sendai, and Tohoku University and the Institute of Fluid Science. Thinking, as he did, of fluid as information was a novel concept which is now being applied to many fields ranging from microsystems, nanotechnology and space flight to the flows within and around human beings.