



INTERNATIONAL UNION OF
THEORETICAL AND APPLIED
MECHANICS



**23rd INTERNATIONAL CONGRESS
OF THEORETICAL AND APPLIED
MECHANICS**

Hosted by
The Chinese Society of Theoretical and Applied Mechanics (CSTAM)
Professor Haiyan Hu (President)

**August 19-24, 2012
Beijing, China**

**Final Announcement
and
Call for Papers**

December 2011

<http://www.ictam2012.org>

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General Information

Date and Venue

The 23rd International Congress of Theoretical and Applied Mechanics (ICTAM2012) will be held in **Beijing, China, from August 19 to 24, 2012**. The Congress is hosted by **The Chinese Society of Theoretical and Applied Mechanics (CSTAM)**. The Congress venue is the **China National Convention Center (CNCC)**, which is located in the heart of the Olympic Green of Beijing, adjacent to the National Stadium (Bird's Nest) and the National Aquatics Center (Water Cube).

The Local Organizing Committee (LOC)

President of ICTAM2012 and Chairman of the LOC

Yilong Bai

The Institute of Mechanics, Chinese Academy of Sciences

Secretary-General of ICTAM2012

Jianxiang Wang

Peking University

Executives of the LOC

Haiyan Hu (Treasurer)

Beijing Institute of Technology

Daining Fang (Academic program)

Peking University

Youshi Hong (Promotion)

The Institute of Mechanics, Chinese Academy of Sciences

Yazheng Yang (Administration)

The Chinese Society of Theoretical and Applied Mechanics

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Xiqiao Feng, Tsinghua University

Song Fu, Tsinghua University

Guowei He, The Institute of Mechanics, Chinese Academy of Sciences

Mian Long, The Institute of Mechanics, Chinese Academy of Sciences

Tianjian Lu, Xi'an Jiaotong University

Qingguo Meng, The National Natural Science Foundation of China

Zhensu She, Peking University

Yueguang Wei, The Institute of Mechanics, Chinese Academy of Sciences

Huimin Xie, Tsinghua University

Mingwu Yuan, Peking University

Si Yuan, Tsinghua University
Shige Zhan, The National Natural Science Foundation of China
Wei Zhang, Beijing University of Technology
Hongwu Zhang, Dalian University of Technology
Quanshui Zheng, Tsinghua University
Xiaojing Zheng, Lanzhou University
Zhewei Zhou, Shanghai University

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Jie Chen, The Chinese Society of Theoretical and Applied Mechanics
Xue Feng, Tsinghua University
Baoqiao Guo, Beijing Institute of Technology
Baohua Ji, Beijing Institute of Technology
Jianjun Tao, Peking University
Haiying Wang, The Institute of Mechanics, Chinese Academy of Sciences
Yong Wang, Peking University

Congress Information

Correspondence related to the Congress should be sent to:

ICTAM2012 Secretariat

The Chinese Society of Theoretical and Applied Mechanics

15 Beisihuanxi Road, Haidian District

Beijing 100190, China

Fax: +86 10 62559588

E-mail: ictam2012@cstam.org.cn

All information on ICTAM2012, including registration, submission of papers, transportation, accommodation, etc., is available on the Congress website at:

<http://www.ictam2012.org>

All information on travels, accommodation and additional tourist programs (for pre- and post-conference tours) is available through the ICTAM12 official Travel and Tourist Agency:

China International Travel Service Limited, Head Office (CITS H.O.)

Rm 1110, CITS Bldg, 1 Dongdan Beidajie, Dongcheng District

Beijing 100005, China

Fax: 86-10-6522 2901 or 6522 2902

E-mail: ictam2012@cits.com.cn

About IUTAM and its Congresses

The International Union of Theoretical and Applied Mechanics (IUTAM) was formed in 1946 with the objective of creating a link between persons and national or international organizations engaged in scientific work (theoretical or applied) in solid and fluid mechanics or in related sciences. It does so mainly by organizing international meetings to deal with scientific problems. An International Congress on Theoretical and Applied Mechanics (ICTAM), including minisymposia and pre-nominated sessions, is held every four years. It is organized by the Congress Committee, established by the IUTAM General Assembly. Additionally, a number of specialized Symposia with invited participants are held every year. These IUTAM Symposia are sometimes held in cooperation with other Unions adhering to the International Council for Science or with the 18 organizations affiliated to IUTAM. At present there are 49 Adhering Organizations, each of them representing scientific activity in the field of mechanics in a country or a particular geographical region. ICTAM2012 follows twenty-two such Congresses organized all over the world since 1924:

- | | |
|--------------------------------|---------------------------------|
| 1. 1924 Delft, The Netherlands | 13. 1972 Moscow, USSR |
| 2. 1926 Zürich, Switzerland | 14. 1976 Delft, The Netherlands |
| 3. 1930 Stockholm, Sweden | 15. 1980 Toronto, Canada |
| 4. 1934 Cambridge, UK | 16. 1984 Lyngby, Denmark |
| 5. 1938 Cambridge, USA | 17. 1988 Grenoble, France |
| 6. 1946 Paris, France | 18. 1992 Haifa, Israel |
| 7. 1948 London, UK | 19. 1996 Kyoto, Japan |
| 8. 1952 Istanbul, Turkey | 20. 2000 Chicago, USA |
| 9. 1956 Brussels, Belgium | 21. 2004 Warsaw, Poland |
| 10. 1960 Stresa, Italy | 22. 2008 Adelaide, Australia |
| 11. 1964 Munich, Germany | |
| 12. 1968 Stanford, USA | |

Members of the IUTAM Congress Committee

Nadine Aubry (USA)	Stelios Kyriakides (USA)
Yi-Long Bai (China)	Pierre Ladevèze (France)
<i>member of XCCC (ex officio)</i>	Gary Leal (USA)
Leslie Banks-Sills (Israel)	Jean-Baptiste Leblond (France)
Dominique Barthès-Biesel (France)	Jacques Magnaudet (France)
Martin Bendsøe (Denmark)	Robert McMeeking (USA)
<i>member of XCCC</i>	Nikita Morozov (Russia)
Dick van Campen (Netherlands)	Ray Ogden (UK)
<i>member of XCCC</i>	Nigel Peake (UK)
Alberto Carpinteri (Italy)	Timothy Pedley (UK)
Gengdong Cheng (China)	President of IUTAM
Renato Cotta (Brazil)	President of XCCC
Frederic Dias (France)	Krishnaswamy Ravi-Chandar (USA)
Peter Eberhard (Germany)	Gábor Stépán (Hungary)
Bruno Eckhardt (Germany)	Howard Stone (USA)
Irina Goryacheva (Russia)	Kazuo Tanishita (Japan)
Narinder Gupta (India)	André Thess (Germany)
GertJan van Heijst (Netherlands)	Viggo Tvergaard (Denmark)
Carl Herakovich (USA)	<i>member of XCCC</i>
Yukio Kaneda (Japan)	Genki Yagawa (Japan)
Tomasz Kowalewski (Poland)	
<i>member of XCCC</i>	

XCCC: The Executive Committee of the Congress Committee

Scientific Programme

The scientific program consists of plenary opening and closing lectures, sectional lectures, mini-symposia, and contributed papers presented in lecture and seminar presentation sessions. Two additional lectures will be presented by the recipients of the G. K. Batchelor Prize in Fluid Mechanics and the Rodney Hill Prize in Solid Mechanics. The text of the opening and closing lectures, lectures of the winners of the Batchelor and Hill prizes, sectional lectures and mini-symposia introductory lectures will be published online by Elsevier in the open-access Procedia IUTAM. All accepted short papers will be published on the CD-ROM Proceedings.

Opening Lecturer

Shiyi Chen (China)

Multiscale fluid mechanics and modeling

Closing Lecturer

Lambert Ben Freund (USA)

Entropic forces in the mechanics of solids

G. K. Batchelor Prize Lecturer

Detlef Lohse (Netherlands)

*Fully Developed Rayleigh-Bénard
and Taylor-Couette Turbulence*

Rodney Hill Prize Lecturer

Huajian Gao (USA)

*Probing mechanical principles of
cell-nanomaterial interactions*

Sectional Lecturers

Kaushik Bhattacharya (USA)

Defects in crystalline solids: Manifestation of quantum mechanics at continuum scales

René de Borst (Netherlands)

Multi-scale mechanics and evolving discontinuities: computational issues

Michael Brenner (USA)

Droplet splashing

Alberto Corigliano (Italy)

Microsystems and mechanics

Peter Eberhard (Germany)

Particles – bridging the gap between solids and fluids

Morteza Gharib (USA)

Lessons for bio-inspired engineering: fluid mechanics of embryonic heart

Raymond Goldstein (UK)

Synchronization of eukaryotic flagella

Robert Goldstein (Russia)

Scale interaction and ordering effects at fracture

Yoichiro Matsumoto (Japan)

Toward the multi-scale simulation for a human body using the next-generation supercomputer

Parviz Moin (USA)

The mechanics and prediction of wall-turbulence

Alain Molinari (France)

Dynamic damage, strain localization and failure of ductile materials

Alan Needleman (USA)

Cohesive surface modeling

Katepalli Sreenivasan (USA)

Cool Stuff at Cold Temperatures

Pierre Suquet (France)

Mechanics of polycrystalline and heterogeneous materials at different scales

Grae Worster (UK)

Dynamics of marine ice sheets

Wei Yang (China)

Nanomechanics of graphenes and nano-crystals

Stéphane Zaleski (France)

Direct numerical simulation of multiphase flows with volume of fluid methods

Mini-Symposia and Chairs

Six topics have been selected for mini-symposia. Each mini-symposium will consist of invited introductory lectures, followed by contributed papers (either lectures or seminar presentations) falling within the scope of the mini-symposia.

MS01. Mechanical challenges in energy

Chairs: Kenneth Reifsnider (USA), Jens Nørkær Sørensen (Denmark), Dongxiao Zhang (China)

Introductory lecturers:

Robert McMeeking: The role of solid mechanics in electrochemical energy systems such as lithium-ion batteries and fuel cells

Fernando Porte-Agel: Interaction between large wind farms and the atmospheric boundary layer

Kenneth Reifsnider: Nano-mechanics foundations and experimental methodologies for multiphysics prognosis of functional behavior in heterogeneous functional materials (HeteroFoams)

Anil Virkar: Mechanical behavior of fuel cells

Dongxiao Zhang: Mechanical challenges in geological sequestration of carbon dioxide

MS02. Mechanics of natural disasters

Chairs: Bernhard Schrefler (Italy), Pavel Tkalich (Singapore)

Introductory lecturers:

R.P. Denlinger: Land and mudslides

Frederic Dias: On the modelling of tsunami generation and tsunami inundation

Yasuo Onishi: Fukushima and Chernobyl nuclear accidents' environmental assessments and U.S. Hanford nuclear site's waste management

Hans von Storch: Storm surges

Mark Zheleznyak: Fluid mechanics approaches to modeling the environmental consequences of nuclear accidents and mud volcano eruption

MS03. Fluid-structure interactions in biological systems

Chairs: Gerhard Holzapfel (Austria), Eric Lauga (USA)

Introductory lecturers:

C. Alberto Figueroa: Pressure wave propagation in full-body arterial models: a gateway to exploring aging and hypertension

Emmanuel de Langre: Flow-plants interactions, ecology and biomimetics

Michael Shelley: Active fluids

Paul Watton: Modelling the evolution of aneurysms: biomechanics, mechanobiology and multiscale modelling

MS04. Mechanics of transport in microfluidic devices

Chairs: Matthew Begley (USA), Henrik Bruus (Denmark)

Introductory lecturers:

Henrik Bruus: Theoretical aspects of microchannel acoustophoresis

Dino Di Carlo: Inertial microfluidics: high-throughput cell and particle manipulation

James Landers: The pinwheel effect for DNA detection: mechanics, mechanism and application

Thomas Laurell: Acoustophoresis in life science applications

Minoru Seki: Rapid and precise particle manipulation in microfluidic devices

MS05. Dynamics and control of morphing structures

Chairs: Ephraim Garcia (USA), Haiyan Hu (China)

Introductory lecturers:

Jonathan E. Cooper: Morphing structures for improved aircraft performance

Jinhao Qiu: Smart skins and actuators for morphing structures

Michael Sinapius: DLR's research in morphing within the European network

MS06. Effects of small size scales in materials modeling

Chairs: Huajian Gao (USA), Marc Geers (Netherlands)

Introductory lecturers:

William Curtin: A mechanistic and predictive model for plasticity size-effects: stress gradient plasticity

Horacio Espinosa: Atomistic mechanical testing of nanostructures – seeing the invisible and bridging theory and experiments

Erik van der Giessen: Multiscale plasticity: How far does reductionism go?

Quanshui Zheng: Size effects of material surface roughness for wetting and transportation: experiments and models

Contributed Papers

These are intended to cover all aspects of mechanics. A list of topics selected for pre-nominated sessions is given below, but papers on other topics are equally welcome. Invitations to present contributed papers will be made on the recommendation of the International Papers Committee, based on the review of submitted abstracts and short papers.

Pre-Nominated Sessions and Chairs

Fluid Mechanics

FM01. Biological fluid dynamics

Silas Alben (USA)

Tomas Bohr (Denmark)

FM02. Boundary layers

Alfred Kluwick (Austria)

Xiyun Lu (China)

FM03. Combustion and flames

Sebastien Candel (France)

Lixing Zhou (China)

FM04. Compressible flow

Rainer Friedrich (Germany)

Song Fu (China)

FM05. Convection

John Patterson (Australia)

Keqing Xia (China)

FM06. Drops, bubbles and multiphase flows

Jacques Magnaudet (France)

Roberto Zenit (Mexico)

FM07. Flow instability and transition

Nadine Aubry (USA)

Bruno Eckhardt (Germany)

FM08. Flow in thin films

Serafim Kalliadasis (UK)

Gherhardt Ribatski (Brazil)

FM09. Geophysical and environmental fluid dynamics

Henk Dijkstra (Netherlands)

Grae Worster (UK)

FM10. Low Reynolds number flow

Osamu Sano (Japan)

Howard Stone (USA)

FM11. Magnetohydrodynamics

Jean-Francois Pinton (France)

Andre Thess (Germany)

FM12. Non-Newtonian and complex fluids

Michael Graham (USA)

Keqin Zhu (China)

FM13. Stirring and mixing

Jianzhong Lin (China)

Joerg Schumacher (Germany)

FM14. Turbulence

Fazle Hussain (USA)

Zhensu She (China)

FM15. Vortex dynamics (In memory of
Hassan Aref and Slava Meleshko)
Yasuhide Fukumoto (Japan)
Mikhail Sokolovskiy (Russia)

FM16. Waves in fluids
Kendall Melville (USA)
Nobumasa Sugimoto (Japan)
FM17. General fluid mechanics

Solid Mechanics

SM01. Biomechanics and biomaterials
Gang Bao (USA)
James Goh (Singapore)
SM02. Contact and friction mechanics
Irina Goryacheva (Russia)
Hongwu Zhang (China)
SM03. Damage mechanics
Romesh Batra (USA)
Carl Herakovich (USA)
SM04. Elasticity
Davide Bigoni (Italy)
Reinhold Kienzler (Germany)
SM05. Fracture mechanics
Francois Hild (France)
Nikita Morozov (Russia)
SM06. Geophysics and geomechanics
Félix Darve (France)
Hans Muhlhaus (Australia)
**SM07. Impact mechanics and wave
propagation**
Krishnaswamy Ravi-Chandar (USA)
Yulong Li (China)
**SM08. Mechanics of multi-component
materials and composites**
Shanyi Du (China)
Anthony Waas (USA)
**SM09. Mechanics of phase
transformations**
Ferdinando Auricchio (Italy)
Eliot Fried (Canada)

SM10. Mechatronics
David Limebeer (UK)
Heinz Ulbrich (Germany)
SM11. Multibody and vehicle dynamics
Dieter Bestle (Germany)
D. V. Singh (India)
SM12. Nanostructures and MEMS
Ioannis Chasiotis (USA)
Ole Sigmund (Denmark)
SM13. Plasticity, viscoplasticity and creep
Christian Niordson (Denmark)
George Voyiadjis (USA)
SM14. Stability of structures
Timothy Healey (USA)
Nicolas Triantafyllidis (France)
SM15. Structural optimization
(Co-sponsored by ISSMO)
Tadeusz Burczynski (Poland)
Erik Lund (Denmark)
SM16. Vibrations and control of structures
Felix Chernousko (Russia)
Marian Wiercigroch (UK)
SM17. General solid mechanics

Topics involving both fluid mechanics and solid mechanics

FS01. Acoustics

Ricardo Musafir (Brazil)
Yuesheng Wang (China)

FS02. Computational methods in mechanics

Petros Koumoutsakos (Switzerland)
Stefanie Reese (Germany)

FS03. Experimental methods in mechanics

Arun Shukla (USA)
Jerry Westerweel (Netherlands)

FS04. Chaos and pattern formation

Dwight Barkley (UK)
Lev Truskinovsky (France)

FS05. Electro- and magnetomechanical systems

Yonggang Huang (USA)
Zheng Zhong (China)

FS06. Fluid structure interactions

Roger Ohayon (France)
Yinlu Young (USA)

FS07. Smart materials

Daining Fang (China)
Robert McMeeking (USA)

FS08. Granular materials and flows

Joe Goddard (USA)
Detlef Lohse (Netherlands)

FS09. Mechanics of materials processing

Francisco Chinesta (France)
Gabor Stepan (Hungary)

FS10. Porous media

Xikui Li (China)
Dominique Salin (France)

FS11. Foams and cellular materials

Andrew Kraynik (USA)
Stelios Kyriakides (USA)

FS12. Education in mechanics

Haiyan Hu (China)
Keith Moffatt (UK)

Prizes

IUTAM Bureau Prizes

Three prizes, each consisting of US\$500, a certificate, and a plaque, will be awarded by the IUTAM Bureau for outstanding presentations by young scientists (under the age of 35 at the time of the award). One will be awarded in Fluid Mechanics, one in Solid Mechanics and one for the best poster (in either Fluid or Solid Mechanics). The winners will be announced at the Closing Ceremony of the Congress.

The G. K. Batchelor Prize in Fluid Mechanics

The G. K. Batchelor Prize, sponsored by Journal of Fluid Mechanics, is an award of US\$25,000 in recognition of outstanding research in the field of fluid mechanics. The prize is presented every 4 years at the ICTAM congress, the next occasion being in Beijing in August 2012. The recipient of the prize will deliver a lecture at the ICTAM congress and this will also be published in Journal of Fluid Mechanics and be made freely available on the Cambridge Journals website. A selection committee whose members are internationally distinguished in fluid mechanics will award the prize.

G. K. Batchelor was a leading figure in fluid mechanics throughout the latter half of the 20th century. He will be particularly remembered for his pioneering work on homogeneous turbulence, turbulent diffusion, and the dynamics and rheology of suspensions of small particles, areas requiring deep probabilistic thought and methods. There are also many topics in laminar fluid mechanics that bear Batchelor's imprint and name. He also had an exceptional impact on the field through the institutions that he created: the Department of Applied Mathematics and Theoretical Physics at Cambridge in 1959, which he led for 24 years; Euromech, which he co-founded in the mid 1960s, and chaired for over 20 years; and the Journal of Fluid Mechanics which he founded in 1956, and edited for 42 years! He also served IUTAM as Secretary of its Congress Committee in the early 1960s and as a member of its General Assembly for more than 25 years. It is particularly appropriate that the fluid mechanics prize sponsored by the Journal of Fluid Mechanics should bear his name.

The Rodney Hill Prize in Solid Mechanics

The Rodney Hill prize, sponsored by Elsevier, is to be awarded in recognition of outstanding research in the field of solid mechanics. The prize is to consist of a plaque and a check for US\$25,000. The prize is to be awarded every 4 years, to coincide with the quadrennial International Congress of Theoretical and Applied Mechanics (ICTAM). The first prize was awarded at the ICTAM 2008 in Adelaide and the second will be awarded at the ICTAM 2012 in Beijing.

Dr. Rodney Hill is widely regarded as among the foremost contributors to the foundations of solid mechanics over the second half of the 20th century. His early work was central to founding the mathematical theory of plasticity. This deep interest led eventually to general studies of uniqueness and stability in nonlinear continuum mechanics, work which has had a profound influence on the field of solid mechanics - theoretical, computational and experimental alike - over the past decades. Hill was the founding editor of the Journal of the Mechanics and Physics of Solids, still among the principal journals in the field. His work is recognized worldwide for the spare and concise style of presentation and for its exemplary standards of scholarship. It is a fitting tribute that the solid mechanics prize sponsored by Elsevier Ltd. bear his name.

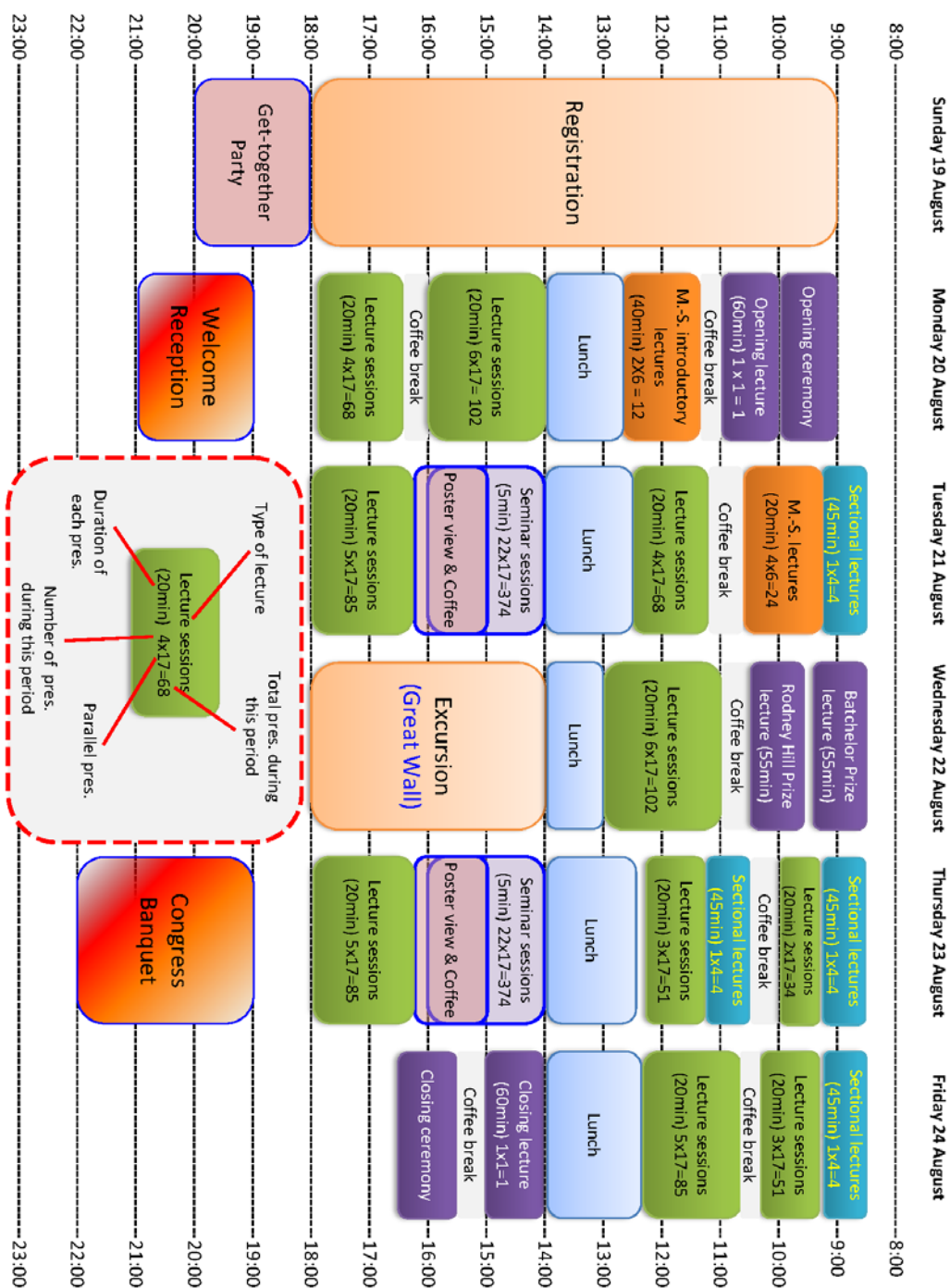
The G. K. Batchelor Prize 2012

G K Batchelor Prize for 2012 is awarded to Professor **Detlef Lohse** of the Technical University of Twente, the Netherlands. Professor Lohse receives the prize for his outstanding research on a wide range of fundamental fluid mechanics, including bubble sonoluminescence, turbulent convection, multiphase flow and microfluid dynamics, and for technological applications. Using innovative laboratory experiments, coupled with theoretical and numerical calculations, Professor Lohse has made significant advances that have provided new understanding of the underlying physics of these many different flows.

The Rodney Hill Prize 2012

The Rodney Hill Prize for 2012 is awarded to Professor **Huajian Gao** of Brown University, USA. Professor Gao receives the prize for his deep and broad scientific achievements in basic solid mechanics and its bridge to other fields, which has re-defined the modern frontiers of mechanics research. His work includes fundamental theory as well as applications to materials science, nanotechnology, and bioengineering. His highly cited publications appear not only in the major solid mechanics journals but also in many high-profile, cross-disciplinary journals

Programme Overview



ICTAM 2012 Programme Overview

The contributed papers to the Mini-symposia and Pre-nominated sessions will be presented in parallel Lecture sessions.

Call for Papers

Congress participants are encouraged to submit papers. Papers are sought for all topics. The official language of the Congress is English. The paper should present material that is novel and preferably unpublished at the time of the Congress. Prospective authors are asked to submit only one paper for consideration. No author will be invited to present more than one paper, with the exception that an author may present one paper on Education in Mechanics and another paper in one of the other sessions. Submission of an Abstract and a Short Paper should be performed on the Congress website. Submission of a paper for consideration requires three steps:

1. Registration for Submission of Paper

All contributors are requested to register themselves using the *Paper On-Line Submission* function on the Congress website. The contributor is requested to input a valid email address, which will be used together with a password to log in to an account to submit the Abstract.

2. Submission of Abstract

The Abstract is limited to 150 words. It should not contain figures, drawings or extended references. The contributor can also choose whether he/she wishes to be considered for the IUTAM Bureau Prize, and can also choose the preferred presentation type (lecture/seminar presentation). Abstracts of all papers invited for presentation will be printed in the Abstract Book. After the submission is completed, the contributor will receive a confirmation email. Then the contributor can log in to the system to submit the Short Paper.

3. Submission of Short Paper

The Short Paper will be used for evaluation by the International Papers Committee. It must have the same title and list of authors as the Abstract. A Short Paper which does not match up with the submitted Abstract in terms of title or names of authors will not be considered. The Short Paper has to be prepared in PDF format and is limited to **TWO** A4 or 8½×11 inch pages maximum. A Short Paper which is more than two pages will be returned. It should be prepared as attractively as possible, much like a manuscript for journal submission. The text must be 10 point or larger in size. To submit the Short Paper, use the *Paper On-Line Submission* function on the Congress website at <http://www.ictam2012.org>.

A template for preparing the Short Paper is provided on the website. If access to the website is not available, please request instructions by sending an e-mail to: ictam2012@cstam.org.cn.

Submissions are accepted after September 1, 2011. The Abstract and Short Paper must reach the Secretariat no later than Thursday, January 19, 2012.

Contributors will be informed of the decision of the International Papers Committee, and on the assignment of their paper to a session, before April 10, 2012. The author of a paper invited for presentation is expected to register and present the paper at the Congress.

Lecture Sessions

Papers selected for presentation as lectures will be arranged by subject in about 17 parallel sessions. A period of 15 minutes, plus 5 minutes discussion, will be allotted to each paper. Standard audio-visual equipment (PC, computer projector, screen, microphone, and pointer) will be available

in each lecture room. Other equipment will be made available if requested by **July 20, 2012**. Authors using computer presentations are requested to upload their files to the Congress server before **August 10, 2012** and to bring their presentation on a CD-ROM. The file format should be PDF, MS PowerPoint or MS Word. Full details of projection facilities will be published on the Congress website and communicated to all lecturers by **May 1, 2012**.

Seminar Presentation Sessions

Authors of papers selected for presentation in the seminar format will be expected to give their presentation during a 2.5-hour period organized as follows: In the first hour each author will present a brief summary (3 minutes) in conventional lecture-room format during one of several parallel sessions. In the remaining time authors will present their work concurrently in more detail with the aid of their posters. The Congress will provide poster boards and stands. The usable area of a poster panel is approximately 1.1m (height) by 1m (width). Instructions for preparing posters will be announced on the Congress website. Authors are advised to read the details.

Publications

Abstracts and Short Papers

An Abstract Book and a CD-ROM containing all Short Papers to be presented at ICTAM2012 will be distributed to registered participants at the Congress. The Abstract Book will be published and registered with an ISBN number.

Proceedings

An e-only Proceedings published by Elsevier will appear after the Congress. It will contain the text of the Opening and Closing Lectures, as well as the Batchelor and Hill Prize Lectures, Sectional Lectures and the Introductory Lectures of the Mini-Symposia; a list of all contributed papers presented at the Congress (but not the Abstracts); a list of participants in ICTAM 2012; and a general report on the Congress, which will be published in the Elsevier Procedia IUTAM indexed at the ScienceDirect and Scopus.

Programme

A booklet summarizing session locations and times, and social events will be distributed to registered participants at the Congress.

List of Participants

A preliminary list of participants attending ICTAM2012 will be distributed at the Congress. The official list will appear in the Congress Proceedings.

Other Information

Support Grants

ICTAM2012 will have at its disposal limited funds to provide partial support to participants who are authors of an accepted presentation, but unable to secure adequate funds from their home countries. Prospective participants who wish to apply for financial assistance should make the application on the Congress website or request an application form from the Secretariat along with further instructions. The deadline for receipt of the form is **January 18, 2012**. The decision on the allocation of grants by the LOC, based on the recommendation of the International Papers Committee, will be made by **May 1, 2012**.

Vendor Exhibits

Booksellers, scientific instrument manufacturers and software vendors and other firms interested in presenting their products and services are invited to sponsor vendor exhibits at ICTAM2012. Detailed information will be available before **January 1, 2012**.

Registration

Advanced registration is strongly recommended for all participants. The Registration of every presenting author must reach the Secretariat before **July 20, 2012** to guarantee inclusion of the paper in the programme and on the CD-ROM proceedings. **Payment should follow** the Registration Form. Registration of participants can be done using:

- **Online Submission**, online registration can be made through the Congress website <http://www.ictam2012.org>.
- **Electronic Submission**
 - **Fax**, sending the Registration Form to **the Secretariat**.
 - **Mail**, sending the Registration Form to **the Secretariat**.

Online registration is preferable for participants who could easily create an account with a valid email address and make the payment for the registration fee, the banquet and social events at the same time. The Registration Form also can be downloaded from the Congress website <http://www.ictam2012.org>.

Registration Fee

The registration fee, charged in Chinese Yuan (CNY), is as follows:

- ✚ Early bird registration (April 10-May 10, 2012): 4,600 CNY
- ✚ Regular registration (May 11-Aug. 12, 2012) : 5,000 CNY
- ✚ Late and on-site registration (Aug. 13-20, 2012): 5,500 CNY
- ✚ Student registration: 2,500 CNY
- ✚ Accompanying person: 750 CNY

The registration fee for a regular participant or a student covers admission to all congress sessions for 5 days, lunches for 5 days, coffee breaks, an abstract book, a congress kit, the get-together party on Sunday, and the welcome reception on Monday. A student participant must provide a valid document showing his/her identity as a registered full-time student. The registration fee for an accompanying person covers a name badge, coffee breaks, the get-together party, and the welcome reception.

Registration for participation and payment can be made on the Congress website. Logistics information, from visa application to local transportation, is provided on the Congress website. If there is a difficulty in the online registration, please request instructions by sending an e-mail to: ictam2012@cstam.org.cn.

On-site Registration

Registration will also be available at the Congress, during **August 19-24, 2012**. On-site registrants will be subject to the on-site registration fee **5,500 CNY**. Payment at the Congress must be made in cash or by credit card (VISA, MasterCard).

Cancellation Policy

Registration fees will be refunded with a deduction of **750 CNY** if the Secretariat receives a written notification of cancellation before **July 20, 2012**. After this date, no refund will be made.

Travel

As the sole official travel agent, China International Travel Service Limited Head Office (CITS, Head Office) will provide the ICTAM2012 participants and their accompanying persons with travel service, including hotel accommodation, city tours during the conference, pre- and post-conference tours around China, airport transfer, and etc.

CITS Head Office Contact:

Fax: +86 10 65222901 or 65222902

Email: ictam2012@cits.com.cn.

International Flight

SAVE UP TO 20% ON TRAVEL WITH THE STAR ALLIANCE™ NETWORK

The Star Alliance member airlines are pleased to be appointed as the Official Airline Network for the 23rd International Congress of Theoretical and Applied Mechanics.

To obtain the Star Alliance Conventions Plus discounts and for booking office information please visit www.staralliance.com/conventionsplus and:

1. Choose "For delegates"
2. Under "Delegates login" enter conventions code **CA03S12**.
3. Choose one of the participating airlines listed
4. Call the respective reservation contact listed and quote the conventions code **CA03S12** when booking the ticket

Registered participants plus one accompanying person travelling to the event can qualify for a discount of up to 20%, depending on fare and class of travel booked.

The participating airlines for this event are: Adria, Aegean Airlines, Air Canada, Air China, Air New Zealand, ANA, Asiana Airlines, Austrian, Blue1, bmi, Brussels Airlines, Continental Airlines, Croatia Airlines, EgyptAir, LOT Polish Airlines, Lufthansa, Scandinavian Airlines, Singapore Airlines, South African Airways, Spanair, SWISS, TAM Airlines, TAP Portugal, THAI, Turkish Airlines, United, US Airways.

Discounts are offered on most published **business** and **economy class** fares, excluding website/internet fares, senior and youth fares, group fares and Round the World fares.

Please note: For travel from Japan and New Zealand special fares or discounts are offered by the participating airlines on their own network.

When making your travel plans please present confirmation of your registration or proof of attendance.



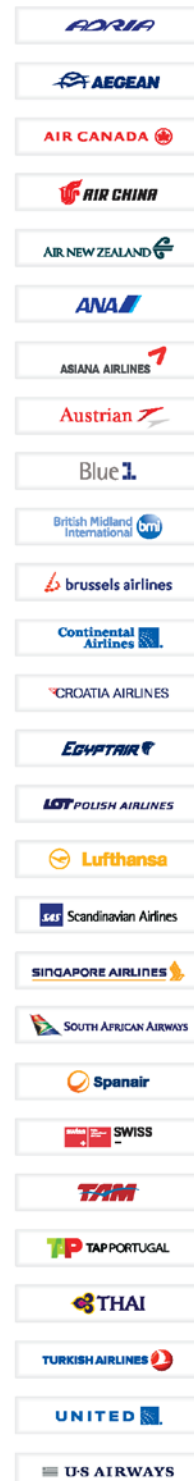
SAVE UP TO 20% ON GETTING TO YOUR CONVENTION WITH CONVENTIONS PLUS

It's easy to save money on your flights if you fly the Star Alliance™ network. Simply quote the event code CA03S12 when you make your booking with any Star Alliance member airline and you'll automatically get a discount of up to 20%.

The Star Alliance network has 27 member airlines with over 21,000 flights a day so we can offer you a lot more choice when planning your travel. For more information about our member airlines and contact details, please visit our website at www.staralliance.com/conventionsplus

www.staralliance.com

Information correct as at 09/2010



STAR ALLIANCE
THE WAY THE EARTH CONNECTS



Transportation from Beijing Capital International Airport to CNCC

- By taxi (Recommended): 40 min, about 100 CNY.
- By light rail and underground: change 2 times, 27 CNY (Destination: Olympic Green; or Olympic Sports Center).
- By shuttle bus: Airport to Anhui Qiao (Anhui Bridge), 16 CNY.

For the convenience of ICTAM2012 participants, the Congress Secretariat will provide airport transfer service to our participants. Our English speaking working staff will be at your service. Book your service online or send your completed Registration & Reservation Form to ICTAM2012 Secretariat with full payment before **August 1, 2012**. All on-site booking requests will be handled according to the actual seat availability on the coach by then.

ROUTE	DATE	PRICE
Beijing Capital Airport to Conference Hotels	19 August 2012 Departures every 30 minutes (starting at 08:00 and ending at 22:00)	CNY160 per person
Conference Hotels to Beijing Capital Airport	25 August 2012 Departures every 30 minutes (starting at 06:00 and ending at 20:00)	CNY160 per person

Travel Documents and Visas

A valid passport and a visa are required for entry into China. Visas can be obtained from your local Chinese Embassy or the nearest Consulate General. A single entry visa is generally valid for one month.

Once in China, participants are advised to carry their passports with them at all times, as they will be needed to check into hotels, book airline tickets, and change money. Early registration is advised so that adequate time is allowed for obtaining visas. Please consult the nearest Chinese diplomatic Embassy or Consulate for details if necessary.

If you require an invitation to the conference for visa purposes, please contact ICTAM2012 Secretariat at the earliest opportunity in advance.

It is strongly recommended that you contact the relevant Chinese Embassy in advance.

Weather

Mid-August in Beijing is sunny and hot. The average daily temperature is about 30°C /86°F, with highs of around 35°C /95°F and lows of around 25°C /77°F. It is an ideal time for tourists to enjoy the beautiful sites of Beijing.

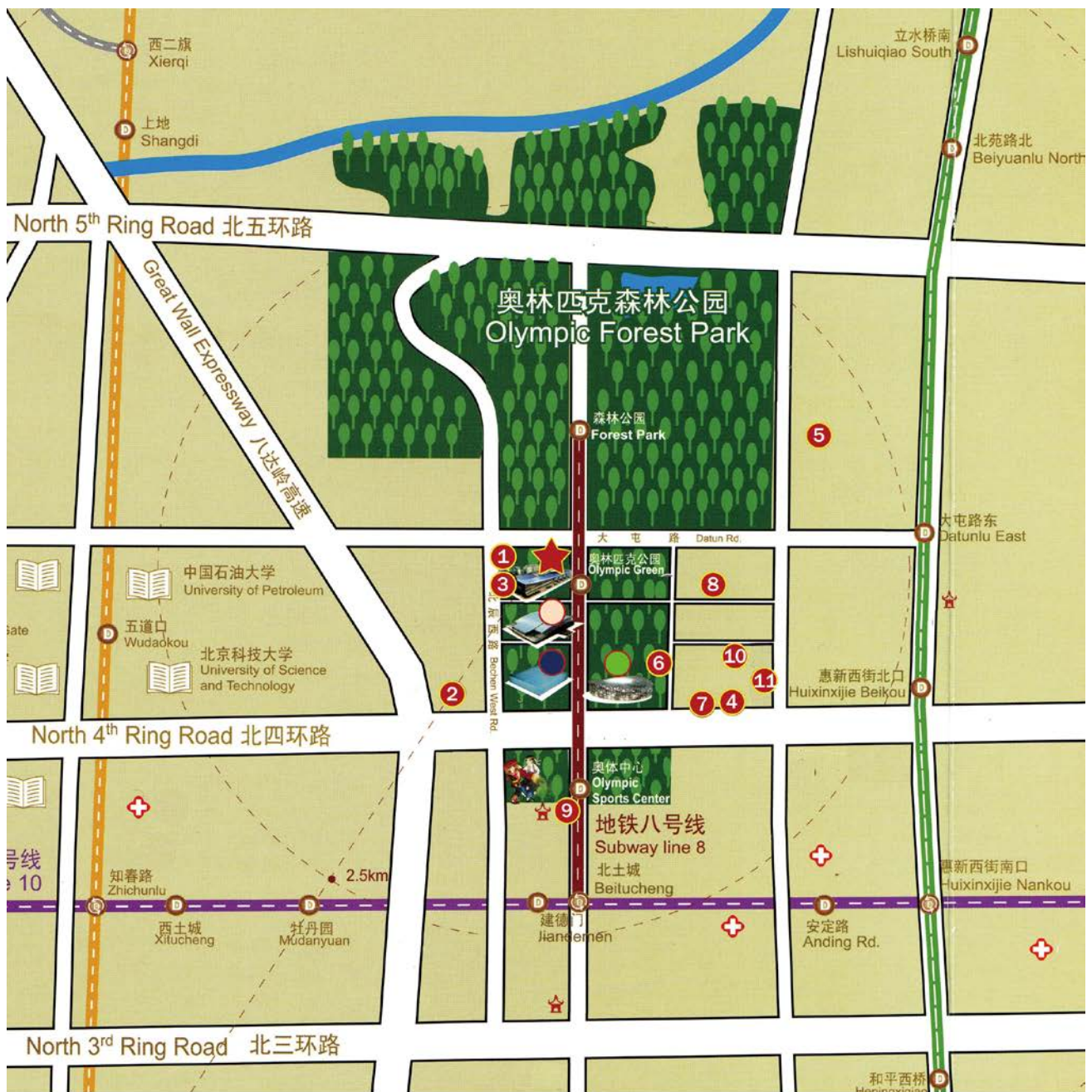
Accommodation and Recommended Hotels

Information of Hotels

There are a number of hotels of different categories, close to the Congress venue, CNCC. Recommended hotels are shown below and listed on the Congress website. Special rates for Congress attendees will be available online in early 2012. Participants should make their own reservations on the Congress website at <http://www.ictam2012.org>.

List of recommended hotels around the China National Convention Center (see map in next page)

No.	Hotel Name	Street	Distance to Congress Venue
1.	CNCC Grand Hotel ★★ ★ ★	8 Beichen West Rd.	0.5 km
2.	Pangu 7 Star Hotel ★★ ★ ★ ★	27 Central North 4th Ring Rd.	1.5 km
3.	InterContinental Beichen ★★ ★ ★ ★	8 Beichen West Rd.	0.4 km
4.	Crowne Plaza Parkview Wuzhou ★★ ★ ★ ★	8 Beisihuanzhong Rd.	2.3 km
5.	Mark Polo Parkside, Beijing ★★ ★ ★ ★	78 Anli Rd.	2.0 km
6.	Grand Skylight CATIC Hotel ★★ ★ ★	18 Beichen East Rd.	1.5 km
7.	Continental Grand Hotel ★★ ★ ★	8 Beichen East Rd.	2.1 km
8.	National Jade Hotel ★★ ★ ★	19 Huizhong Rd.	1.5 km
9.	Holiday Inn Express Beijing Minzuyuan ★★ ★	1 Minzuyuan Rd.	2.6 km
10.	Yayuncun Hotel ★★ ★	8 Beichen East Rd.	1.9 km
11.	Huiyuan Apartment Media Village	8 Beichen East Rd.	1.9 km



- ★ **China National Convention Center**
- **National Indoor Stadium**
- **China National Aquatics Center (Water Cube)**
- **China National Stadium (Bird's Nest)**

Social Events

Get-together Party

The Get-together party will take place at the congress venue on Sunday August 19. Registered participants and registered accompanying persons are welcome.

Welcome Reception

The Welcome reception will take place on Monday August 20 evening. Registered participants and registered accompanying persons are welcome.

Congress Banquet

Price: 480 CNY

We would like to recommend the Congress Banquet /Gala Dinner on August 23. You will be able to take part in an unforgettable evening with a delicious menu featuring the best of traditional Chinese foods.

Half-day Excursion to the Great Wall

Price: 350 CNY

The world-renowned **Great Wall** is the symbol of ancient Chinese civilization, standing grandly in the land of China for more than 2,000 years and stretching over 6,350 km. The Badaling stretch of the Great Wall is the most popular in the world.

The Congress Banquet and Half-day Excursion can be booked on the Congress website.

One Day Tour in Beijing

CT1: Badaling Great Wall & the Ming Tombs

Price: 410 CNY

Consist of 13 imperial tombs, the **Ming Tombs** are spread around a valley that looks like a natural courtyard with an entrance guarded by huge stone animals. Of the tombs only the underground burial chambers of Dingling were open to the public after excavation in 1956.

CT2: Forbidden City & Hutong by pedicabs

Price: 390 CNY

Built in 1406 to 1420, the **Forbidden City** was the Chinese imperial palace from the Ming Dynasty to the end of the Qing Dynasty. For almost five hundred years, it served as the home of emperors and their households, as well as the ceremonial and political center of Chinese government. Now it houses the Palace Museum. The complex consists of 980 buildings, covers 720,000 m², and is listed by UNESCO as the largest collection of preserved ancient wooden structures in the world.

CT3: Summer Palace, Panda Garden, Lama Temple & Capital Museum

Price: 360 CNY

The **Summer Palace** is one of China's largest and best-preserved imperial gardens. It was the temporary palace and summer resort of the imperial household in Qing Dynasty. Built in 1750, it occupies a total area of 3.34 million m², and is composed by Kunming Lake and Longevity Hill, dotted with halls and pavilions.

CT4: Tian'anmen Square, the Temple of Heaven & Gaobeidian Village

Price: 360 CNY

First built in 1420 and occupying an area of 273 hectares, the **Temple of Heaven** was the shrine where emperors of Ming and Qing Dynasties offered sacrifices to Heaven and prayed for bumper harvests. It represents the greatest achievements of Ming and Qing architecture. Nowadays the surrounding of the Temple of Heaven has become a very popular park for exercising.

CT5: One day excursion to Sea-port city of Tianjin

Price: 410 CNY

Tianjin is one of the four municipalities directly under the Central Government of China. It lies 120 kilometers southeast of Beijing by the Bohai Sea. The whole city is built around the sinuous Haihe River. From Beijing, it takes only 1 hour to drive by expressway.

Remarks for the city tours:

1. All city tours will depart from the conference venue, CNCC.

2. Service to be offered for the city tours:

- English speaking guide
- Transfer by air-conditioned coach
- Admission fee
- A lunch at local restaurant

Booking & Cancellation Terms:

- Please book your tours online or send your completed Registration & Reservation Form to ICTAM2012 Secretariat. Reservation will last until 2 days prior to each departure. Any late reservation is subject to the space availabilities. Advance full payment is required by means of online payment or bank transfer.
- Upon your arrival in Beijing, please reconfirm your reservation and pick up your tour tickets at the Travel Desk of the ICTAM2012 Registration Center.
- China International Travel Service Limited Head Office will confirm your tour booking in writing. If there is any booking amendment or cancellation, please inform China International Travel Service Limited Head Office in writing.
- If any cancellation occurs 48 hours prior to the cancelled tour departure, no penalty charges.
- If any cancellation occurs within 48 hours of the cancelled tour departure, 100% tour cost will be charged.

Pre- & Post-Conference Tours

BT1: Shanghai – Beijing (3 days / 2 nights)

Price:

3,410 CNY per person on sharing room basis
3,890 CNY per person on single occupancy

- 17 August (Friday), Shanghai
- 18 August (Saturday), Shanghai
- 19 August (Sunday), Shanghai - Zhujiajiao Watertown - Beijing

Jade Buddha Temple was built in 1882. The seated jade statue of Sakysmuni in the temple is 1.9 meters tall and was carved out of a single piece of white jade weighing 1 ton, and inlaid with dazzling jewels. The **Bund**, once known as the “Wall Street of China”, is a bustling promenade along the Huangpu River. **Zhujiajiao Watertown** is a typical ancient water town, with a history of more than 1700 years. It is less than 1 hour drive from Shanghai downtown. Lakes and wharves interweave in the town. Historical spots are everywhere. To have a boat ride on the river and to walk around the narrow street make people pleasant and enchanted.

PT1: Beijing – Xi'an – Shanghai (5 days / 4 nights)

Price:

5,670 CNY per person on sharing room basis
6,490 CNY per person on single occupancy

- 25 August (Saturday), Beijing - Xi'an
- 26 August (Sunday), Xi'an
- 27 August (Monday), Xi'an - Shanghai
- 28 August (Tuesday), Shanghai
- 29 August (Wednesday), Shanghai - Exit

Terra-cotta Figures Museum was built on the site where thousands of life-sized terra-cotta warriors and horses were unearthed. These figures served as a terra-cotta army to the tomb of the First Emperor of Qinshihuang (259 – 210 BC). **Banpo Neolithic Museum** is built on the ruins of the 6,000-year-old Banpo site, which was a typical matriarchal clan community in the Yellow River valley. The **Big Wild Goose Pagoda** is the symbol of the city. It was built in 652 in the Tang Dynasty to keep the 657 volumes of Buddhist scriptures brought back from India by Monk Xuanzang.

PT2: Beijing – Xi'an – Guilin
(4 days / 3 nights)

Price:
5,590 CNY per person on sharing room basis
6,050 CNY per person on single occupancy

- 25 August (Saturday), Beijing - Xi'an
- 26 August (Sunday), Xi'an - Guilin
- 27 August (Monday), Guilin
- 28 August (Tuesday), Guilin - Exit

One day cruise on the Li River to Yangshuo, then bus back to Guilin. During the river cruise, you can best enjoy the charming beauties of the landscape, the green mountains, limpid waters, weirdly formed caves and dazzling stalactites and stalagmites. **Reed Flute Cave** is a huge and fantastic cavern eroded out of Karst formation. It is lined along its entire 500-meter zigzag length with stalactites and stalagmites in the shape of imagination forms. The **Longsheng Rice Terraces** are located in Longsheng County about 2 hours from Guilin. The rice terraces are built into the hillsides. The terraces look like great chains or ribbons as they wind from the foot to the top of the hill. This ingenious construction makes best use of the scarce arable land and water resources in the mountainous area.

PT3: Beijing – Urumqi – Kashgar – Turpan – Dunhuang
– Xi'an – Beijing
(9 days / 8 nights)

Price:
15,980 per person on sharing room basis
17,650 per person on single occupancy

- 25 August (Saturday), Beijing - Urumqi - Kashgar
- 26 August (Sunday), Kashgar
- 27 August (Monday), Kashgar - Urumqi
- 28 August (Tuesday), Urumqi - Turpan
- 29 August (Wednesday), Turpan - Dunhuang
- 30 August (Thursday), Dunhuang
- 31 August (Friday), Dunhuang - Xi'an
- 1 September (Saturday), Xi'an - Beijing
- 2 September (Sunday), Beijing - Exit

Astana-Karakhoja Ancient Tombs are known as "The Underground Museum". The tombs are scattered over an area of 10 sq m². Buried there are both officials and common people. Some 1,000-year-old mummified corpses have been unearthed

Baizeklik Thousand-Buddha Caves are the Buddhist center from the 6th to 13th century. There are 77 caves, and inside each cave is a mural of the Buddha painted on the ceiling along with hundreds of Buddhist sculptures and figures.

Idkah Mosque is the largest mosque in China and one of the largest in the world. The Mosque is the religious center of Kashgar. The large prayer hall is supported by 140 carved wooden pillars. The call to prayer booming from the mosque can be heard throughout the city center.

Mogao Grottoes are the world's most important site of ancient Buddhist Culture. The treasure house contains hundreds of sandstone caves holding more than 2,000 statues and 45,000 brilliantly bright paintings of Buddha and Chinese mythological figures.

PT4: Beijing - Lhasa - Chengdu
(5 days / 4 nights)

Price:

8,990 CNY per person on sharing room basis
10,300 CNY per person on single occupancy

- 25 August (Saturday), Beijing - Lhasa
- 26 August (Sunday), Lhasa
- 27 August (Monday), Lhasa
- 28 August (Tuesday), Lhasa - Chengdu
- 29 August (Wednesday), Chengdu - Exit

Jokhang Monastery located in the very center of the city, was built in 647 by King Songtsan Gambo to commemorate his bride, the Han nationality Princess Wen Cheng's arrival in Tibet. Through several renovations it became a large building group, with an area of over 25,000 square meters. The monastery was built in the style of Tang Dynasty structures and adopted the characteristics of architecture from Nepal and India.

Drepung Monastery was built in 1416 and is the largest monastery of the Gelug Sect. In its heyday, it had more than 10,000 monks. The 15th Dalai Lama lived here before he moved to the Potala Palace. It houses plenty of historical and cultural relics and Buddhist classics. In the exciting Shoton Festival, "Sunning the Buddha" ceremony held in the monastery has been one of the most magnificent religious activities in Tibet.

The **Potala Palace**, located on the Moburi Mountain northwest of Lhasa city, is well-known as a palace and a fortress. It was built in the 7th century by King Songtsan Gambo for the Princess Wen Cheng. The Potala is composed of the Red Palace and White Palace. The former is mainly for religious affairs, the latter for politics and daily life.

Norbulingka Park was originally built in the 1740s during the reign of the 7th Dalai Lama. It was renovated and enlarged and became the Dalai Lama's Summer Palace. Here Dalai Lama would handle political affairs and hold festival celebrations each year from April to September. Now it has been turned into a park

Visit the Chengdu Giant Panda Base. The base has not only dedicated itself to giant panda conservation, but has also made great efforts to combine natural scenery and man-made landscapes to create wonderful and humane living areas for giant pandas, red pandas, and other Chinese endangered animals.

Remarks for the above pre- & post-conference tours:

1. Following services are to be offered for the above tours:

- Accommodations with breakfasts at the hotels as stated in the programs.
- Daily lunches and dinners in the tourist restaurants.
- Sightseeing programs as stated in the itineraries.
- English-speaking guide service in each city. Furthermore a main guide will go with the group throughout the whole trip.
- Ground transfer with air-conditioned tourist coach.
- City-to-city transportation as specified in the itinerary. All exit tickets are to be self-arranged.
- Luggage handling.

2. The tour itineraries may change slightly according to the flight schedule of 2012.

3. The prices listed above are for the group consisting of 10 persons or more. If any tour is signed up by less than 10 persons, we will recalculate the tour and inform you accordingly.

Tours Booking & Cancellation Terms:

Please book your tours online or send your completed Registration & Reservation Form to ICTAM2012 Secretariat before June 1, 2012. Any late reservation is subject to the space availabilities. Advance full payment is required by means of online payment or bank transfer.

Upon your arrival in Beijing, please reconfirm your reservation and pick up your tour tickets at the Travel Desk of the Conference Registration Center.

China International Travel Service Limited Head Office will confirm your tour booking in writing. If any booking amendment or cancellation occurs, please inform China International Travel Service Limited Head Office in writing.

For each tour cancellation, CNY 350 per person plus actual air-ticket and hotel cancellation cost will be charged.

Practical information

The City

Beijing, as the capital of China, is the nation's political, economic and cultural center and is unique in its history, tradition and character. From the 12th century to 1911, it was the capital of the Jin, Yuan, Ming and Qing Dynasties. Now Beijing is shaping itself into a thoroughly modern metropolis, covering an area of 16,800 square kilometers and encompassing a population of 13 million. You will find the city an unforgettable destination, with its ancient Great Wall, the Forbidden City and numerous palaces and temples as a reminder of dynasties lost in the mists of time. Moreover, the city has refreshed its character by the growing numbers of parks and recreational centers, the folk shows during holiday celebrations, the splendid theatrical performances, and the grand city outlook.

Insurance

The conference organizers do not accept any liability for personal accidents or loss or damage to the private property of any participants during the conference or indirectly arising from attending the conference. It is advisable that participants should take adequate travel and health insurance before leaving their own countries.

Time Difference

8 hours ahead of Greenwich Mean Time (GMT +8)

Currency

Chinese currency is called Ren Min Bi (RMB) or Chinese Yuan (CNY), which include 1 yuan, 2 yuan, 5 yuan, 10 yuan, 50 yuan and 100 yuan, 10 cents, 20 cents, and 50 cents. 100 US Dollars are roughly equal to 650 CNY. For the latest and exact exchanging rates, please visit: <http://www.boc.cn/sourcedb/whpj/enindex.html>.

Credit Cards: easy!

Credit cards are widely accepted at restaurants, hotels and stores across metropolitan Beijing.

ATM in China

ATM can be easily found and used in Beijing. Check the logos on your card. Foreign cards compatible with the Cirrus or Maestro networks can be used in practically every local bank or foreign bank like Citi and HSBC in Beijing. The Bank of China and many of Beijing's foreign banks accept Visa, Mastercard, Eurocard, JCB network cards. Take care, however, not to assume that every ATM in every branch will accept your card – the Cirrus/Maestro or Visa compatible ATMs are always clearly marked. No logo, no foreign connection!

Electricity



The electricity supply in China is generally 220V, 50Hz, AC. The Chinese standard three-pin mains socket is shown on the left. Overseas participants are advised to bring travel adaptors with them if necessary.

Language

Mandarin is the official language in China and is widely used in Beijing. However, there are some English services available in hotels, places of interest, subways and some other public places. Here are some daily-used Chinese in Chinese Pin Yin, which can be useful for you.

English	Chinese Pin Yin
<i>Hello!</i>	<i>Ni Hao!</i>
<i>Excuse me!</i>	<i>Lao Jia!</i>
<i>Sorry.</i>	<i>Dui Bu Qi.</i>
<i>How much is it?</i>	<i>Duo Shao Qian?</i>
<i>Where is it?</i>	<i>Zai Na Li?</i>
<i>It's a good day!</i>	<i>Jin Tian Tian Qi Bu Cuo!</i>

Business Hours

Shopping malls, mobile service companies, some post offices and other public services open all around the year, including in public holidays. The standard working hours in China are usually 8 am to 5 pm or 9 am to 6 pm, except for major shopping malls and supermarkets, most of which will run from 8:30 am or 9 am and close around 9 p.m. in winter and 10 pm in summer. Usually, 7-9am and 5-7 pm are the peak hours, when traffic should be taken into consideration.

Telecommunications

International calls may be made directly from hotel rooms with IDD lines. With an IC card, you can also make domestic long distance calls and international calls from public telephones or you can apply for long distance call service in your place of accommodation. Internet services are quite popular nowadays in Beijing. Internet services are available at hotels, business centers and Internet cafe. Wireless Internet connection is provided at some restaurants and clubs. You can apply for various internet connections, such as broadband, ADSL, ISDN and dial-up. You can choose to pay on a monthly basis without time limitation or based on hours of use.

Mobile Service

China has two national mobile telecommunications operators, China Mobile Communications Corporation ("China Mobile" for short, GSM) and China United Telecommunications Corporation ("China Unicom" for short, mainly CDMA). By the end of 2005, 100% of the counties (cities) had been covered by network with seamless coverage on the backbone lines and indoor coverage in key urban areas. China Mobile has provided GSM roaming services with over 271 operators in 206 countries and regions and GPRS roaming services with 93 operators in 101 countries and regions in the world. Its mobile short messages can be sent to 214 operators in 106 countries and regions and multimedia messages to 21 operators in 6 countries and regions. As for the number of CDMA subscribers, China Unicom reached 36.493 million and was ranked the second largest CDMA cellular operator in the world.

Express Services

EMS, DHL, UPS, TNT and FedEx provide express services in Beijing. All kinds of urgent documents and goods can be delivered to more than 170 countries around the world. You can ask for express services at large-scale post offices, at your hotel's business centre or even make a phone call for at-the-door collection. For EMS, you could call 185.

Tap Water

Tap water in China is considered hard and needs to be boiled before drinking. All hotels will provide boiled water or an electric kettle.

Restrooms

Travelers can easily find free public restrooms on the street, in office buildings, shopping centers, supermarkets, hotels and fast food restaurants.

Hotlines

Phone Number	Service
110	<i>Police</i>
114	<i>Local Telephone Number Inquiry</i>
116	<i>Domestic Long Distance Inquiry</i>
117	<i>Time Inquiry</i>
119	<i>Fire</i>
120	<i>Ambulance</i>
121	<i>Weather Forecast</i>
122	<i>Traffic Police</i>

Transportation

Transportation in Beijing is convenient, with buses, taxis, light rail, subway etc.

- **Bus:** A bus ride in Beijing costs about 1 yuan-3 yuan depending on distance. Most city buses run from 5:30am - 22:00pm.
- **Taxi:** Taxis are everywhere in the city and is the most convenient way to get around. Taxis charge 2.0 yuan per kilometer for the first 15 km, and then 2.4 yuan for every additional kilometer. Toll fees are an extra. It is best to carry a guide book or hotel card with the name of your destination shown in Chinese, to show the taxi driver.
- **Light rail:** The full fare is about 3 yuan.
- **Subway:** Beijing subway is a rapid and convenient transit network with 13 lines. The single-ride tickets costs 2.00 CNY and it is a flat fare with unlimited transfers and applies to all lines except the Airport Express, which costs 25.00 CNY per ride.

For further information, please visit the official website of the Beijing Tourism Administration.
URL: <http://english.visitbeijing.com.cn>



Acknowledgements

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1. The China Association for Science and Technology
2. The National Natural Science Foundation of China
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25. State Key Laboratory of Mechanics and Control of Mechanical Structures, Nanjing University of Aeronautics and Astronautics
26. Department of Engineering Mechanics, Shanghai Jiao Tong University
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28. Institute of Applied Physics and Computational Mathematics, Beijing
29. China Academy of Aerospace Aerodynamics
30. Southwest Jiaotong University
31. Department of Modern Mechanics, The University of Science and Technology of China
32. Zhengzhou University