



Harbin Institute of Technology

Center of Structural Monitoring & Control

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APESS2018

2018 Asia-Pacific-Euro Summer School on Smart Structures Technology (APESS2018)

July 16 - August 5, 2018 Qingdao & Harbin, China

APESS Welcome message

It is our pleasure to invite you to attend the 2018 Asia-Pacific-Euro Summer School on Smart Structures Technology (APESS). The summer school is organized under auspices of the Asian-Pacific Network of Centers for Research in Smart Structures Technology (ANCRISST). The summer school will be divided into two stages. From July 16th (one week before WCSCM) to July 27th, it will be held at Qingdao University of Technology; and from July 28th to August 5th 2018 it will be held at Harbin Institute of Technology. We will move from Qingdao to Harbin on July 28th.

Participants of the APESS will attend three-week lectures given by experts in civil engineering, structural dynamics and control, smart structures technology, and structural health monitoring. They will also participate in technical visit and laboratory projects where they will learn about fundamental and practical use of sensing principles and technologies for infrastructure monitoring.

The APESS program aims at providing participants with international oriented program that recognizes both the achievements in smart structures technology of participating nations as well as a common desire to pioneer a structured educational framework. Through this program, participants will be exposed to leaders in the field, both domestic and international.

We would like to acknowledge the supports from Asian-Pacific Network of Centers for Research in Smart Structures Technology (ANCRISST), Harbin Institute of Technology, and Qingdao University of Technology.

Welcome to Qingdao and Harbin. We are delighted to have you as the participant and wish you to have a good and fruitful time at the 2018 APESS.

Hui Li
Chair of APESS, 2018
Changjiang Scholarship Professor
Professor of School of Civil Engineering
Harbin Institute of Technology, China

Smart Structure Technologies and the Role of APESS

Advanced sensor technology improves the accuracy of measurements and provide more opportunity for more detail structural evaluation. Their application in the modern world is increasingly widespread. Structures instrumented with sensors can communicate their current condition to a data acquisition system in the form of accelerations, displacements, strains, etc., depending on the sensor type. This information can be used in real-time to control and evaluate structure performance during severe earthquake or wind loads or assess the health of a structure after such events. In the long term, sensors can be used to evaluate structure degradation and to plan maintenance or retrofit works. Instrumentation of full scale structures is a daunting task involving a push for improved technology and understanding in areas of structural dynamics, control systems, circuit technology, wireless technology, and informatics, to name a few. In summary, smart structure technologies offer new opportunities and challenges to the way civil infrastructure systems are monitored, controlled, and maintained.

Conventional civil engineering curriculum only exposes students to the range of the contributing disciplines to smart structures technology in a limited fashion. The APESS program aims at bridging the gap that divides these disciplines through a student oriented international summer program. Graduate students and young researchers each from Japan, China, Korea, the USA and European Countries will get together for three weeks of focused activities related to smart structures technology. The curriculum will be oriented to address any gaps in education which are necessary for the advancement of the field.

The 2018 APESS will be the 11th edition of the summer school, with the first edition held in 2008 in KAIST South Korea and the last edition held in Yokohama National University Japan in 2017. Other previous hosts of the APESS include the Univ. of Illinois at Urbana-Champaign (UIUC) US, Univ. of Tokyo Japan, Tongji University China, Indian Institute of Science India, the National Taiwan University China, and the Cambridge University UK.

The Programme

Advanced structure engineering and dynamics

- Advanced structure dynamics
- Research and development in long-span bridges
- Research and Practice in Steel Structure
- Hybrid Simulation Testing
- Finite Element Model Updating, Validation and Verification
- Wind Engineering and Earthquake Engineering

Structural Control and Applications

- Structural Control Theory
- System Identification Theory and Application
- Application of control technologies to buildings and bridges

Smart Structures Technology, Sensing and Materials

- Data Acquisition for structural monitoring
- Wireless Sensors and Fiber-Optic Sensors
- Development of Smart Sensing Technologies and materials for NDT
- Application of Robots Technology

Structural Health Monitoring and Assessments

- Structural damage detection
- Applied system identification for structural assessment
- Data analysis via machine learning
- Sparsity and environment issues in SHM
- Experiences and Practices of SHM for buildings and bridges
- Serviceability and lifetime assessment of structures

In addition to the lectures, students will participate in:

- Laboratory projects on the use of sensing principles and technologies for monitoring infrastructure
- Attendance to 7WCSCM Conference (22-25 July at Qingdao City) with half registration fee (150USD)
- Technical visit to structures with control application and new constructions
- Exciting cultural events around Qingdao and Harbin

Important Dates and Contacts

The registration time is from Jan. 1st to Feb. 2th 2018.

Please send your information to: APESS2018@163.com

Xinchun Guan
Dehu Yu
Shunlong Li
Jigang Zhang
Ming Wen

The Host

Harbin Institute of Technology (HIT)

- Founded in 1920, one of the best engineering universities of China
- 20 schools and departments
- 2948 faculty members, 16199 undergraduate, 7999 postgraduate, 5197 Ph. D students

For further information, please visit website: <http://en.hit.edu.cn/about-overview.asp>

Qingdao University of Technology (QUT)

- Founded in 1952, one of key universities of Shandong Province
- 19 schools and departments
- 1497 faculty members, 29733 undergraduate, 1700 postgraduate and Ph. D students

For further information, please visit website: <http://english.qtech.edu.cn>

The City

Harbin

Harbin Located in the center of Northeast Asia, is called the bright pearl on the Bridge of Eurasia Land, and it is also an important hub of Eurasia Land Bridge and air corridor. The special historical course and geographical position has contributed to Harbin, the beautiful city with an exotic tone, which not only brings together the historical culture of northern ethnic minorities, but also combines western and eastern culture. It is a famous historical and tourist city in China, with many beautiful names such as "the City of Culture", "the City of Music", "Ice City", "A Pearl under the Neck of the Swan", "Eastern Moscow", and "Eastern Little Paris".

For further information, please visit website: <http://www.harbin.gov.cn/english.htm>

Qingdao

Qingdao is honored as "Chinese Brand Capital" and "World Beer City". It is also one of the second lot of national low-carbon pilot cities and its four satellite cities Jimo, Jiaozhou, Pingdu and Laixi all hit the Top 100 Chinese Counties. 2005 saw Qingdao winning the first prize of "the most desirable Chinese cities in public opinion" and Chinese National Geography selecting Badagou as one of China's five most beautiful urban areas. In 2007, Qingdao became the only Chinese city chosen for "The Most Beautiful Bay of the World" and one year later, then known as the "World's Sailing Capital", it successfully organized the Sailing Competition of the 29th Olympic Games. On January 7th of 2011, the State Council approved the planning of the Marine Economic Zone of Shandong Peninsula of which Qingdao is the core. In 2012, Qingdao ranked 9th on the list of Chinese competitive cities. Some more nationwide rankings and titles from the same year include "Best leisure city", "Top 10 tourist city" and "Happiest city". As for the future, the World Leisure Games will be held in Qingdao in 2015.

For further information, please visit website: <http://english.qingdao.gov.cn/n4248/index.html>