International Summer School on Stochastic Dynamics and Reliability of Civil/Offshore Structures (ISSSD2015)

(July 22-24, 2015)

Co-organized by: Tongji University & Aalborg University

Co-sponsored by:

Random Vibration Committee, Chinese Society of Vibration Engineering (CSVE)

Committee on Structural Computation Theory and Applications, Architectural Society of China (ASC)

Aim and Scope

The safety and serviceability of emerging huge civil and offshore structures are of increasing concern in the past decades. Operating loadings (e.g. wind for the wind turbines) and particularly disastrous external excitations are usually time variant and of random nature. Simultaneously, large uncertainties are also involved in structural models and parameters. Therefore, stochastic dynamics and reliability evaluation serve as basic tools in modern refined analysis and design of civil/offshore structures.

Besides traditional civil/offshore structures, the engineering structures involved in the renewable energy harvesting industry, as part of the important infrastructures, play important role and are responsible for the safety and serviceability of the whole energy harvesting systems. Particularly, the past decade witnessed rapid increase in the installed capacity of wind turbines in the world, while China is among the countries grows fastest and is now the country with largest wind turbine installed capacity. It is expected that in the next decade the development of offshore wind turbines will dominate renewable energy harvesting. More challenges exist in offshore wind turbine systems than onshore wind energy harvesting systems. Under this background, the safety and reliability of offshore wind turbines and related offshore engineering structures will be of great concern to the economics and efficiency of offshore wind energy harvesting. Besides, the wave energy is also a promising renewable energy in the future. Therefore, in this summer school the structures involved in the renewable energy harvesting, including the offshore wind turbines and wave energy absorbers, are also of great concern.

To this end, a series of annual summer schools were initiated from 2013. The first one was held in August 14-16 2013 in Shanghai, China. The second one was held in August 6-8 2014 in Aalborg, Denmark. This summer school to be held in July 22-24 2015 is the third one, which intends to provide a forum for the review and dissemination of the state-of-the-art and state-of-the-practice of stochastic dynamics and global reliability of civil/offshore structures, including both the general engineering structures and the new structures such as offshore wind turbines and wave energy absorbers, and to educate and train the new generation of researchers, designers and related professionals in this field. Those who are interested in stochastic dynamics and reliability of civil/offshore engineering structures are welcome to this international summer school.

Topics

- Modeling of engineering dynamic excitations (earthquake, wind and wave) on civil/offshore structures
- Aerodynamics and structural dynamics of offshore wind turbine structures
- Stochastic dynamics and optimal control of wave energy point absorbers
- Stochastic dynamics of nonlinear structures
- Advanced dynamic and global reliability assessment methods for wind turbines and civil/offshore engineering structures

Speakers

Prof. Søren R.K. Nielsen, Aalborg University, Denmark
Prof. Bitswajit Basu, Trinity College, Dublin, Ireland
Prof. Hanping Hong, University of Western Ontario, Canada
Prof. Jie Li, Tongji University, China
Prof. Jianbing Chen, Tongji University, China

Important Dates

July 21, 2015	Registration
July 22-24, 2015	Lectures

Preliminary Schedule

July 21, 2015	Registration
July 22, 2015	
Prof. Hanping Hong	Probabilistic risk analysis of earthquakes and typhoons
Prof. Jie Li	Physically based stochastic modeling of engineering dynamic excitations (earthquake ground motions, fluctuating wind and sea waves)
July 23, 2015	
Prof. Jie Li	Stochastic dynamics of engineering structures: probability density evolution method
Prof. S.R.K.Nielsen	Aerodynamics and structural dynamics of wind turbine systems
Prof. Bitswajit Basu	Structural control of offshore wind turbine systems and civil structures
July 24, 2015	
Prof. S.R.K.Nielsen	Optimal control of wave energy point absorbers
Prof. Jianbing Chen	Dynamic and global reliability evaluation of large civil structures and offshore wind turbine

Registration and Payments

Registration fees will cover 3 lunches, one dinner, 6 coffee breaks and some materials for the course.

The registration fees are as follows:

Early-bird registration (before July 1 2015):

- Regular participant US$300
- Student participant US$200 (Note: Student participant should provide a document or student ID card that could certificate his/her student status.)
- Accompany person US$150

Regular registration (after July 1 2015):

- Regular participant US$350
- Student participant US$250 (Note: Student participant should provide a document or student ID card that could certificate his/her student status)
- Accompany person US$200

Contact

Webpage: http://www.dpcetj.org/SummerSchool2015/SummerSchool2015.htm

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Introduction to the Speakers

✧ **Prof. Søren R.K. Nielsen,** Aalborg University, Denmark

Professor Soren R.K. Nielsen is a professor in the Department of Civil Engineering at Aalborg University. He received his doctorate at Technical University of Denmark in 1974. The main research areas for him include fluid-structural interaction, soil-structure interaction, wave propagation in solids, structural dynamics and vibration control. In 1995, he received Hojgaa rd and Schulz A/S Jubilee Research Prize due to his outstanding contributions in this related areas. In 2001, he received the Knight of the Order of the Dannebrog. He serves as member of Editorial board of Soil Dynamics and Earthquake Engineering and member of board of Nordic Vibration Research, and other international journals and associations.

Dr. Nielsen was selected in the "High-end Foreign Experts Recruitment Program" by the State Administration of Foreign Experts Affairs of China in 2013.

✧ **Prof. Bitswajit Basu,** Trinity College, Dublin, Ireland

Dr. Basu is now Professor and Head of the Department of Civil Structures and Environmental Engineering. His major research interests include nonlinear dynamics and systems, random vibrations and stochastic mechanics, stochastic processes, structural dynamics, system identification, systems health monitoring, time frequency and wavelet analysis, vibration control, wind energy and wind turbines. He authored or co-authored over 200 publications including more than 100 journal papers. Prof. Basu serves now as the editor of IEEE Sustainable Energy Systems, associate editor of ASCE J of Structural Engineering, and on the editorial board member of several other international journals. He is the members of ASCE, ASME and IEEE, etc.

Dr. Basu was selected in the "High-end Foreign Experts Recruitment Program" by the State Administration of Foreign Experts Affairs of China in 2015.

✧ **Prof. Hanping Hong,** University of Western Ontario, Canada

Dr. H.P. Hong is a Professor in the Department of Civil and Environmental Engineering at the University of Western Ontario. He is a foreign member of The Mexican Academy of Engineering, and a fellow of Canadian Society of Civil Engineering. He has expertise and published more than 130 peer reviewed journal publications in the areas of application of probabilistic analysis, reliability and risk assessment, and natural hazard assessment and evaluations. He has contributed to the reliability-based and economic efficient structural design code development and calibration. He received several awards for his research published works.

Dr. Hong was selected in the "High-end Foreign Experts Recruitment Program" by the State Administration of Foreign Experts Affairs of China in 2015.

✧ **Prof. Jie Li,** Tongji University, China

Dr. Jie Li is currently a Chair Professor in the Structural Engineering at Tongji University in the School of Civil Engineering. He specializes in the area of structural engineering, earthquake engineering and stochastic mechanics. Prof. Li received his Ph.D. in Civil Engineering from Tongji University, China in 1988. He has been among one of the first group of Cheung Kong Scholar Professors entitled by the Ministry of Education of China since 1999. Prof. Li is the author of six monographs, and is the co-author of over 350 technical publications, including over 300 peer-reviewed journal papers, in the fields of earthquake engineering and stochastic structural analysis. He currently serves in the Executive Board of International Association for Structural Safety and Reliability (IASSAR), the Board of Governors of Civil Engineering Risk and Reliability Association (CERRA), in the Joint Committee on Structural Safety (JCSS), and the chairman of the Random Vibration Committee of Chinese Society of Vibration Engineering, the chairman of the Committee of Structural Computational Theory and Engineering Applications of Architectural Society of China and is in more than 10 other related academic committees. He is the editor-in-chief of Journal of Tongji University (Natural Science Series) and serves on the editorial boards of over 10 international and Chinese academic journals, including the International Journal of Nonlinear Mechanics, Structural Safety and International Journal of Damage Mechanics, ect. Prof. Li received the Freudenthal Medal bestowed by

ASCE in 2014.

✧ **Prof. Jianbing Chen,** Tongji University, China

Dr. Jianbing Chen is currently professor on the faculty at Tongji University in the School of Civil Engineering. Dr. Chen received a Ph.D. in Civil Engineering from Tongji University, China in 2002. He has been a visiting scholar in the University of Southern California (2006-2007) and visiting professors in Aalborg University (2012) and Vienna University of Technology (2014). Dr. Chen specializes in the area of structural reliability, stochastic dynamics and earthquake engineering. He is the co-author 4 books (including one English book) and over 150 technical publications, among which were over 100 peer-reviewed journal papers. He was selected in the "NCET Plan" of MOE of China (2007) and the "Shuguang Program" of Shanghai (2011), and was the recipient of Huo Ying Dong prize (2012) and the "National Outstanding Scientific and Technological Workers" (2014). He is now a member of Joint Committee on Structural Safety (JCSS), and of IFIP Working Group 7.5 on Reliability and Optimization of Structural Systems, serves as the vice Chairman of the Random Vibration Committee of the Chinese Society of Vibration Engineering, and in the editorial board of "Journal of Vibration Engineering".

Other Related Information

Information of the former International Summer Schools:

ISSSD2013: http://dpcetj.org/SummerSchool2013/SummerSchool2013.htm

ISSSD2014: http://www.civil.aau.dk/isssd2/programme/