THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
土木及環境工程學系
CEE

National Rail Transit Electrification and Automation Engineering Technology Research Center (Hong Kong Branch)
國家軌道交通電氣化與自動化工程技術研究中心(香港分中心)

Seminar on Operational Measurements and Application on Full-Size Bridges

Prof. Wei-Xin Ren

Changjiang Distinguished Professor of Bridge Engineering
Hefei University of Technology, Hefei, China

ABSTRACT

The operational vibration measurements induced by natural or environmental excitations have the advantage of being inexpensive since no equipment is needed to excite the structure. The service state does not have to be interrupted by using this technique. The operational measurements are aimed at identifying structural modal parameters (frequencies, damping ratios and mode shapes). In the case of operational measurements, only response data are measured while actual loading conditions are unknown. A modal analysis procedure will therefore need to base itself on output-only data. These modal parameters will serve as basis or input to the finite element model updating, to the damage algorithms, and to the safety evaluation of existing bridges. These modal parameters will also be essential in the monitoring of structures on service and the controlling of structures. The objective of this seminar is to present the system identification from operational measurements and application on full-size bridges. The real applications include:

- Finite element model updating of a half-through concrete-filled tubular arch bridge, China.
- Baseline finite element modeling of a large span (605 m) cable-stayed bridge, China;
- Structural condition evaluation of the John A. Roebling suspension bridge (1867);

Date: **7 January 2019 (Monday); 8 January 2019 (Tuesday)**

Time: **3:00-4:30pm**

Venue: **Z210, PolyU**

SPEAKER'S BIOGRAPHY

Dr Wei-Xin Ren is currently a Changjiang Distinguished Professor at the Department of Civil Engineering, Hefei University of Technology, China. He received his Ph.D. in bridge engineering from Central South University, China in 1993 and followed two-year post-doctoral research in Tsinghua University, China. He was promoted to be a full professor in 1995. He was a visiting professor in Japan, Belgium, USA and Australia.

His research interests include the broad areas of bridge and structural engineering: stability and dynamics, cable-stayed bridge, damage detection, finite element model updating, structural condition assessment and heath monitoring. He has published 6 books and more than 350 publications including 140 referred international journal papers.

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***** All Interested Are Welcome *****

For further information, please contact Miss Autumn Lin at Tel. 3400 8535.

Certificates of attendance will be provided to participants if they attend the whole lecture.