

Special issue on wind loads and wind-induced responses of vehicle-bridge systems

Preface

Bridge aerodynamics and vehicle aerodynamics are two significant branches in Wind Engineering. Particularly as vehicles move on bridges, a new aspect of wind related issues for vehicle-bridge system emerges. It involves multi-disciplines, such as bridge dynamics, wind loads on bridges, vehicle dynamics, wind loads on vehicles, and the interaction between vehicles and bridges. It is in high demand for industry to ensure the safety of running vehicles on bridges in windy environment. This aspect thus has been given intensive attention in the last few years. As a result, the aerodynamics of vehicle-bridge system (specially the moving vehicle-bridge system), the safety of vehicles as they pass by a bridge tower under crosswinds, the random vehicle flow-bridge system under crosswinds, the wind-proof measures and their effectiveness have been becoming the research focuses in recent years.

This special issue on “*wind loads and wind-induced responses of vehicle-bridge systems*” aims to aggregate the most recent advances, progress, and ideas in the field of wind loads and wind-induced responses of vehicle-bridge systems. A total of 12 peer-reviewed papers have been presented in this special issue, among which paper 1 on an review about the coupled wind-vehicle-bridge system and its applications, paper 2 on the dynamics of high-speed train in crosswinds, paper 3 on the effects of wind field simulation on the vehicle running performance, paper 4 on the mutually-affected aerodynamic effects on the wind-vehicle-bridge system, papers 5-6 on the effects of wind barriers on the high-speed train-bridge system in cross wind, paper 7 on the nonlinear dynamics of wind-traffic-long span bridge system, paper 8 on the influence of vehicles on the flutter stability of long span bridge, papers 9-10 on the monitoring of wind-induced responses of bridges, and paper 11-12 on the aerodynamic effects of long span bridges. These papers provide the state-of-the-art researches and developments of this subject.

The guest editors would like to express their sincere gratitude to all the reviewers for their contributions in this issue. Furthermore, the guest editors particularly thank Prof. C.K. Choi and Dr. J.D. Holmes, Editors-in-Chief of Wind and Structures, for their kind initiative and guidance of this special issue. This meaningful work was jointly supported by the National Natural Science Foundation of China (Grant No. U1334201, 51278434, 51408503).

Guest Editors:

Yongle Li, Professor, Southwest Jiaotong University, China (lele@swjtu.edu.cn)

Steve C.S. Cai, Professor, Louisiana State University, USA (cscai@lsu.edu)

Ting-Hua Yi, Professor, Dalian University of Technology, China (yth@dlut.edu.cn)