

学术报告

解决风工程问题的风洞试验、CFD和人工智能技术 Addressing Wind Engineering Problems using Wind Tunnel Testing, CFD, and Artificial Intelligence Techniques

报告人: 胡 钢 博士后 (Dr. Gang HU)

主持人: 华旭刚 教授

时 间: 2019年8月1日上午9:30

地 点: 风洞实验室会议室(201室)



Abstract

This presentation will introduce application of traditional tools, e.g. wind tunnel testing (WTT) techniques and computational fluid dynamic (CFD) simulations, and the emerging technique, i.e. artificial intelligence (AI), in the field of wind engineering. WTT and CFD have been used to reveal aerodynamic behaviors of an inclined square cylinder, tall buildings with double-skin façade, tall buildings with vertical-axis wind turbines, and enhance efficiency of piezoelectric wind energy harvesting. An AI prediction model based on WTT datasets has been built to predict wind force acting on circular cylinder for Re ranging from 10^4 to 10^6 and turbulence intensity (Ti) ranging from 0% to 15%. This AI model provides very efficient and economical alternative to WTT and CFD simulations for determining wind force around circular cylinders within the studied Re and Ti range. Furthermore, AI technique has been employed to evaluate interference effects between tall buildings.

Short Bio of Dr. Gang HU

Currently a postdoctoral research associate at School of Civil Engineering, The University of Sydney. He obtained his bachelor, MPhil, and PhD degree from Central South University (2009), Harbin Institute of Technology (Shenzhen, 2011), and Hong Kong University of Science and Technology (2015) respectively. From 2015/09, he joined the CLP Power Wind/Wave Tunnel Facility at HKUST as a research associate, and served as a postdoc fellow at Department of Civil and Environmental Engineering at HKUST from 2016/09 to 2017/11. From 2017/12 to date, he has been employed as a postdoc research associate at the School of Civil Engineering, The University of Sydney. He is an executive committee member of Hong Kong Wind Engineering Society. His research interests include structural wind engineering, wind energy by using wind tunnel test, CFD, and AI techniques. To date, he has published about 30 papers in international reputable journals.

欢迎广大师生踊跃参加!