



Prof. Teng Wu
University at Buffalo

Advanced Wind Engineering: Changing Climates, Aerodynamics and Dynamics

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2:00 pm

Sala Consiglio
Dipartimento di Meccanica
Via La Masa 1, Milano

Abstract

Mitigation of losses due to wind hazards has become an increasingly urgent and challenging problem in light of our changing climates. The assurance of structural safety and reliability under extreme winds requires accurate modeling of wind-induced effects. It heavily relies on our understanding of the nature of tropical cyclone and non-synoptic winds (characteristics of wind inputs), the bluff-body aerodynamics (from wind inputs to load outputs) and the characterization and quantification of structural vibrations under winds and their mitigation (from wind load inputs to structural response outputs), which are current research focuses of the Wind Group at University at Buffalo.

This presentation will introduce some efforts made by us on the consideration of the nonstationary winds, nonlinear aerodynamics and nonlinear structural dynamics in the simulation of wind-induced effects on civil infrastructures.

Three topics will be covered: (a) Rapid estimate of tropical cyclone (hurricane) wind and rain fields under changing climates; (b) Analysis and synthesis of nonstationary winds under non-synoptic events (downbursts and tornadoes); and (c) Simulation of transient wind effects on structural aerodynamics.

Speaker short CV

Dr. Teng Wu received his Ph.D. degree from University of Notre Dame in 2013. He is currently an Assistant Professor in the Department of Civil, Structural and Environmental Engineering at the University at Buffalo (UB). Wu has made significant contributions to development of analytical and computational methods focusing on nonlinear and unsteady features of structural aerodynamics. His contributions have been recognized through the 2013 American Society of Civil Engineers (ASCE) O.H. Ammann Research Fellowship, 2014 American Association for Wind Engineering (AAWE) Best Paper Award, 2016 ASCE Alfred Noble Prize, 2017 AAWE Robert Scanlan Award and 2017 International Association for Wind Engineering (IAWE) Junior Award.

Wu currently serves as the Associate Editor of ASCE Journal of Bridge Engineering and Frontiers in Built Environment-Wind Engineering and Science. He also serves on a number of ASCE committees including Wind Engineering Division's Structural Wind Engineering Committee and ASCE Standards Committee ASCE 49 - Wind Tunnel Testing for Buildings and Other Structures.

He is a member of Super-Long-Span Bridge Aerodynamics Working Group of International Association for Bridge and Structural Engineering (IABSE). Since joining UB, Wu have demonstrated his capability to obtain funds from Federal and State levels in United States and through International collaborations. He is currently in collaboration with more than 15 national and international institutions. Wu has authored more than 40 articles published in highly respected journals of structural/wind engineering fields, and presented more than 50 conference papers.