MECHANICAL & MATERIAL COLLOQUIUM

Recent advances in experimental simulation of extreme wind impact on the built and natural environments—examples from the Wall of Wind Experimental Facility

by Amal Elawady (CEE FIU)

The United States has learned very hard lessons in the last decade about its human, economic, and infrastructure vulnerabilities to wind hazard events. The NSF-NHERI Experimental Facility (EF) at Florida International University – the 12-fan Wall of Wind (WOW) -- is a windstorm simulation facility that allows testing of holistic building systems and other structures at multiple scales in wind speeds up to and including hurricane Category 5 on the Saffir-Simpson scale, with a wind-driven rain option. The WOW allows researchers to generate new knowledge on wind-structure interaction, wind-induced damage, and rain intrusion mechanisms. The goal is to improve design practices for structural and building envelope systems and lifeline infrastructures to create more wind-resilient and sustainable communities to prevent wind hazard events from becoming community disasters. This seminar will discuss the groundbreaking research at the national facility and how it helps researchers across the nation to advance the knowledge pertaining to wind field characterization, fluid-structure interaction, and structural response to extreme windstorms.

****

Dr. Amal Elawady is an Associate Professor in the Civil and Environmental Engineering Department at Florida International University (FIU). Dr. Elawady's academic interest is focused on advancing the field of civil engineering to enhance the resiliency and sustainability of natural and built environment against extreme wind hazards. Her studies involve large-scale wind tunnel testing, wind effects analysis to examine structural response, and design of structures against extreme wind events. She is a Fellow of FIU's Extreme Event Institute. She is also a co-PI of two NSF-national centers at FIU: the NHERI Wall of Wind Experimental Facility and the IUCRC Wind Hazard and Infrastructure Performance Center. Dr. Elawady is conducting groundbreaking research on hurricane and thunderstorm effects on structures and urban trees. Dr. Elawady has published over 30 journals and 50 conference papers and presentations. Her work at the Wall of Wind enabled expanding the capability of the national facility to simulate thunderstorm downbursts in addition to hurricanes. Dr. Elawady has received over $2M in research funding as PI from different federal, state, and industry agencies in addition to several multi-million dollars as a co-PI. Dr. Elawady is the recipient of the 2022-Faculty Early Career Development Program (CAREER) Award from the National Science Foundation. She has been recently named FIU Top Scholar in 2024 for Research and Creative Activities.

Place:
EC 1113

Time:
2:00-3:15 PM
April 1, 2025

https://mme.fiu.edu/seminar-schedule

For questions, comments and suggestions, contact Colloquium Organizers Dr. Benjamin Boesl (bboesl@fiu.edu) or Dr. Jiuhua Chen (chenj@fiu.edu)