THWARTS 2023 DETAILED SCHEDULE

MONDAY AUGUST 14TH

08:00 – 09:00 Registration & Breakfast

09:00 – 09:15 Opening Remarks
Opening remarks by **Franklin T. Lombardo**

09:15 – 09:45 Keynote Lecture
Toward a First Ever ASCE Standard on Wind Speed Estimation in Severe Storms.
James LaDue
Acting Director of the National Windstorm Impact Reduction Program (NWIRP) in the Engineering Laboratory at the National Institute of Standards and Technology (NIST).

09:45 – 10:15 Keynote Lecture
Engineering Design for Tornadoes.
Marc L. Levitan
Lead Research Engineer for the National Windstorm Impact Reduction Program at the National Institute of Standards and Technology.

10:15 – 10:20 Break

10:20 – 12:00 Technical Session #1: Tornado Prediction and Wind Flow Characteristics

1.1 TORNADOCAST: A 2D dynamical modelling system for the prediction of tornado characteristics
Trapp, R.J. [1*]; Sessa, M.[1]; Allen, J.[2]; and Robinson. E.[3]
[1]Department of Atmospheric Sciences, University of Illinois Urbana-Champaign; [2]Department of Earth and Atmospheric Sciences, Central Michigan University; [3]Aon, Chicago.

1.2 Characterizing Extreme Near-Surface Winds in Tornadoes and Hurricanes
Kosiba, K.[1*]; and Wurman, J.[1*].
[1]Department of Atmospheric Sciences, University of Illinois Urbana-Champaign.

1.3 Automated Large-Scale Tornado Treefall Detection and Directional Analysis Using Machine Learning
Butt, D.[1*]; and Kopp, G.A.[1].
[1]Northern Tornadoes Project, Western University, London, ON, Canada.

1.4 Radar And Satellite-Based Tools For Predicting Locations Of Tornadogenesis Within Quasi-Linear Convective Systems
Wolff, E.[1*]; Trapp, R.J.[1]; and Nesbitt, S.W.[1]
[1]Department of Atmospheric Sciences, University of Illinois Urbana-Champaign.

1.5 Insights into Tornadogenesis from LES Supercell Simulations
Orf, L.[1*]
[1]University of Wisconsin-Madison.

12:00 – 13:00 Lunch

13:00 – 15:20 Technical Session #2: Resilience of the Built Environment and Communities

2.1 Investigation Of Resilience-Based Hazard Mitigation Strategies for Tornado-Stricken Communities Using Agent-Based Modelling Approach
Han, X.[1*]; and Koliou, M.[1]
[1]Zachry Department of Civil and Environmental Engineering, Texas A&M University.

2.2 Quantifying Risk Perception of Tornado Hazards Using Behavioral Economic Modeling
Graham, M.E.[1*]; Gelino B.W.[2]; Sutley E.J.[1]; and Reed, D.D.[1,3]
[1]University of Kansas; [2]Johns Hopkins University School of Medicine; [3]Institutes for Behavior Resources, Inc., Baltimore.

2.3 Harnessing Post-Disaster Data for Refined Tornado Damage Predictions in Community Resilience Models

Ghasemi, S.[1*]; Roohi, M. [1]; Wood, R.L. [2]; and Roueche, D.[3].
[1]Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln; [2]Department of Civil and Environmental Engineering, university of Nebraska-Lincoln; [3]Department of Civil and Environmental Engineering, Auburn University.

2.4 Unstructured to actionable: extracting wind event impact data for enhanced infrastructure resilience.
Pham, H.[1*]; and Arul, M.[1]
[1]Virginia Tech.

2.5 New Methodology to Study Tornado Outbreaks Based on Social Susceptibility Metric: December 2021 Tornado Outbreak.
Johnston, B.[1*]; and Van de Lindt, J.W.[1]
[1]Colorado State University.

2.6 Tornado Hazard Assessment for Multiple Critical Facilities considering Tornado Outbreaks in the Northeastern US Region.
Banik, S.[1*]; and Twisdale, L.A.[2]
[1]Applied Research Associates, Inc. Raleigh; [2]Consultant, Raleigh.

2.7 Physical-Social Interdependent Recovery Modeling following an EF5 Tornado
Wang, W.[1*]; Van de Lindt, J.W.[1]; Hamideh, S.[2]; and Sutley, E.[3]
[1]Department of Civil and Environmental Engineering, Colorado State University; [2]School of Marine and Atmospheric Sciences, Stony Brook University; [3]Department of Civil, Environmental, and Architectural Engineering, University of Kansas.

15:20 – 15:40 Coffee break

15:40 – 17:00 Facility tour: Newmark Civil Engineering Laboratory & Smart Bridge

The tour to the facilities will depart from and return to the conference location (iHotel). We invite THWARTS 2023 attendees to join us for a tour to the NewMark Civil Engineering Laboratory & The Kavita and Lalit Bahl Smart Bridge. Transportation to the facilities and back to the conference center will be arranged and announced later.
If you are planning to attend this event, please fill out the following google form so that we provide proper arrangements.
https://forms.gle/qAu6bAjJBHDwczfc7

19:00 Dinner at Houlihan's Restaurant + Bar (not included with registration)

We invite THWARTS 2023 attendees to join us for dinner at Houlihan's Restaurant & Bar (located in the iHotel: 1900 S 1st St Champaign, IL 61820). This is an informal event to encourage interactions among attendees. The event is not included with the registration fees and every attendee will pay for their own. If you are planning to attend this event, please fill out this google form such that we can know in advance the number of people to expect and reserve enough tables for us.

TUESDAY AUGUST 15TH

08:30 – 09:00 Breakfast & Networking

09:00 – 10:40 Technical Session #3: Tornado Wind Effects

3.1 Wind Performance of Residential Garage Doors
Merhi, A.[1*]; Morrison, M.J.[1]; and Brown-Giammanco T.M.[2]
[1]Insurance Institute for Business & Home Safety; [2]National Institute of Standards and Technology (NIST).

3.2 Unique Damage Instances and Characteristics in the Rolling Fork, Ms, Tornado Of 24 March 2023
Lyza, A.W. [1*]; Wagner, M.A.[1,2]; Rasmussen, E.N.[2]; Candela, D.[3,1,2]; Ortega, K.L.[1,2]; Satrio, C.[1,2]; Pounds, L.[1,2]; and Sizemore, A.[4]
[1]Cooperative Institute for Severe and High-Impact Weather Research and Operations, University of Oklahoma; [2]NOAA/OAR/National Severe Storms Laboratory; [3]School of Meteorology, University of Oklahoma; [4]NOAA/National Weather Service Birmingham, AL.

3.3 Multi-Method Near-Surface Wind Speed Estimates of the 24 March 2023 Rolling Fork, Ms Tornado
Johnson, D.R.[1*]; Roueche, D.B.[1]; and Rittelmeyer, B.M.[1]
[1]Auburn university

3.4 A Novel Digital Twin Framework of Electric Power Infrastructure Systems Subjected to Strong-Wind Hazards
Braik, A.[1*]; and Koliou[1]
[1]Zachry Department of Civil and Environmental Engineering, Texas A&M University.

3.5 Deep Learning Based Automated Tree-Fall Detection
Nasimi M.[1*]; and Wood, R.L.[1]
[1]University of Nebraska-Lincoln

10:40 – 10:50 Break

10:50 – 12:00 Technical Session #4: Numerical Models & Simulations

4.1 Effects of the Local Wind Field Curvature of Tornado-Like Flows on The Aerodynamics of a Low-Rise Building
Brusco, S.[1*]; and Kopp, G.A.[1].
[1]Faculty of Engineering, Western University, London, ON, Canada.

4.2 Assessing Tornado Intensity, Treefall, and Terrain Interactions via Remote Sensing
Wood, R.L.[1*]; Peterson, C.J.[2]; Nasimi, M.[1]; Moon, S.M.[3]; Dev, C.[4]; Godfrey, C.M.[5]; and Lombardo, F.T.[3]
[1]University of Nebraska-Lincoln; [2]University of Georgia; [3]University of Illinois Urbana-Champaign; [4]University of Kansas; [5]University of North Carolina.

4.3 Using Machine Learning Models to Efficiently Search Large Sets of Damage Survey Images for Particular Damage Indicators
Haan Jr.; F.[1*],Jha, A.[1]; and Rajbhandari, R.[1]
Calvin University.

4.4 An Open-Source Automated Tornado Intensity Assessment for Treefalls
Rhee, D.M.[*1,2]; Lombardo, F.T.[1]; Kopp, G.A[3]; and Sills D.M.L.[3]
[1]University of Illinois Urbana-Champaign; [2]National Institute of Standards and Technology; [3]Northern Tornadoes Project, Western university, London, ON, Canada.

12:00 – 13:00 Lunch

13:00 – 14:40 Technical Session #5: Measurement & Observation.

5.1 Effects of Complex Terrain on The Near-Surface Wind Field of 10 December 2021 Kentucky Tornado
Moon, S.M[1*]; and Lombardo, F.T.[1]
[1]University of Illinois Urbana-Champaign.

5.2 Modeling Tornado-Like Vortices in Straight-Line Wind Simulators
Khaled, F.[1*]; and Lombardo, F.T.[1]
[1]University of Illinois Urbana-Champaign.

5.3 The Influence of Thunderstorm Type on Extreme Near-Surface Wind Speeds: Iowa Case Study
Roegner, D.[1*]; Lombardo, F.T.[1] ; Wienhoff, Z.[2]; and Rhee, D.[3]
[1]University of Illinois Urbana-Champaign; [2]Haag Engineering; [3]National Institute of Standards and Technology.

5.4 Informed Treefall Pattern Analysis Wind Estimation Of 2021 Quad- State Tornado Near Downtown Mayfield, Kentucky
Rhee, D.M.[1*]; Levitan, M.L.[1]; and LaDue, J.G[1].
[1]University of Illinois Urbana-Champaign; [2]National Institute of Standards and Technology; [3]Northern Tornadoes Project, Western university, London, ON, Canada.

5.5 To Evaluate the Effect of Varying Lengths of Attached Canopies on Roof Surfaces of Low-Rise Buildings Under the Influence of Tornado Like Flow
Moizuddin, M. [1]; Goyal, R.[2*]; and Matsui, M.[3]
[1]Civil Engineering Department, RIMT University, Punjab, INDIA; [2]NICMAR University, Pune, INDIA;[3]Department of Architecture, Tokyo Polytechnic University, JAPAN

14:40 – 15:00 Closing Remarks

Closing remarks by **Franklin T. Lombardo**

15:00 – 15:30 Refreshments