



The 53rd Midwest Universities Fluid Mechanics Retreat MUFMECH 2026

April 9-11, 2025

Cedar Lake Ministries, Cedar Lake, Indiana

PROGRAM



----- Friday, April 10 -----

8:00 – 8:45am **BREAKFAST**

Session A: Chair: Kishan Bellur, U Cin; KOTGOF: Ahmed Naguib, MSU

Talk	Time	Speaker	School	Title
	8:50	Top Frog – Scott Dawson	IIT	Opening Remarks
1	8:56	Oliver Vian Thulasiraman	UIUC	Two-dimensional turbulence of polymer solutions
2	9:09	Vedant Kumar	Purdue	Investigation of turbulent flow relaminarization in heated pipe flow
3	9:22	Minh Nguyen	U Iowa	Vortex Ring interacting with a non-canonical deformable wall boundary
4	9:35	Kelvin Figueroa-Ibrahim	ND	De-trending of atmospheric boundary layer measurements acquired upstream of an open-rotor facility
5	9:48	Gage Minder	Iowa St	An Experimental Study on the Interaction of Droplets with Oblique Shockwaves
6	10:01	Ashwin Suriyanarayanan	Purdue	Nudging based turbulence closure modeling

10:14 – 10:34 am **COFFEE**

Session B: Chair: Andrew Oliva, MTU; KOTGOF: Candace Wark, IIT

Talk	Time	Speaker	School	Title
7	10:34	Anchal Sareen	U Mich	Adaptive Flow Control using Smart Morphable Surfaces
8	10:47	Syed Assiqul Haque	Iowa St	An Experimental Investigation of Convective Heat Loss of a Human Hand Model Exposed to Cold Windy Environment
9	11:00	Chukwudum Eluchie	U Iowa	Comparative analysis on the effect of actuation frequency of a novel synthetic jet created by dynamic deformable surface
10	11:13	Troy Metz	MTU	Enhancing Hydrogen Production using Cavitation
11	11:26	Sudharshan Anandan	Purdue	Field-driven transport processes for enhanced separation in membranes
⚡	11:39	Lightning Talks Session 1: Maximum 4 minutes, 3 slides each	IIT	Victor Jimenez: Nonlinear extensions to operator-based causality analysis
⚡			IIT	Sasindu Pinto: Causality Analysis of Turbulent Separation Bubbles
⚡			IIT	Jonathan Horak: Experimental Validation of a Novel Compliant Mechanical Amplifier Topology
⚡			IIT	Mahyar Moaven: Multi-Pulse Dual-Frame Velocimetry
⚡			MTU	Mitsuki Shimomura: Introduction to Hall Thruster Ignition Research
⚡				

12:00– 1:00pm **LUNCH**, Steering Committee Meeting

Session C: Chair: Jeff Allen, MTU; KOTGOF: Doug Carter, IIT

Talk	Time	Speaker	School	Title
12	1:15	Subodh Chander	IIT	Noise-Induced Bias in Projection-Based Reduced-Order Models
13	1:28	Edward Skrabacz	NW	Stellar-wind Fueled Accretion onto Sagittarius A* in the Presence of a Nuclear Star Cluster
14	1:41	Ahmed El-Nadi	IIT	Secondary mean flow effect on linear amplification mechanisms in turbulent square ducts
15	1:54	Saaras Pakanati	U Cin	A Multiscale Handshake: A More Complete View of Hydrogen Fuel Evaporation
16	2:07	Kaiqi Zhou	U Iowa	Design of a Novel Coughing Simulator for Viscoelastic Mucus Removal
17	2:20	Allan McAlpine	Purdue NW	Study of ruffling injectors in a supersonic cross flow
18	2:33	Yuan Zhao	Iowa St	An Experimental Study of Dynamic Ice Accretion Process of Wind-driven Runback Droplets over Frozen Cold Surfaces
19	2:46	Md Shbbir Shohan	Iowa St	Convective Heat Transfer Enhancement by Bubble Induced Agitation

⚡	2:59	Lightning Talks Session 2: Maximum 4 minutes, 3 slides each	U Iowa	Cong Wang: Measurement and visualization of surface-piercing turbulent wake flow
⚡			U Iowa	David Butler: Characterization of dynamic instability in surface piercing turbulent wake flow
⚡			Purdue	Kazuki Maeda: Microscopic physics of H ₂ /O ₂ reactive shock waves
⚡			Purdue	Emin Saridede: Investigation of thermal effects on the vapor-gas bubble dynamics
⚡			ND	Ilya Sniff: Mixing Enhancement in Supersonic Flow by Oscillating Electrical Discharge
	3:19	Candace Wark	IIT	Tribute to John Foss

3:25 – 5:00pm **R & R, Group Photograph**

5:00 – 5:50pm **DINNER**

Session D: Chair: Kazuya Tajiri, MTU; KOTGOF: Hui Hu, Iowa St

Talk	Time	Speaker	School	Title
20	6:00	Alejandro Benítez De la Riva	Purdue	Computational Modeling of Dynamic Capillary Flows in Sub-orbital Spaceflight
21	6:13	Kayde Bowers	Iowa St	An Experimental Study of Supersonic Jet Flow Characteristics Using Advanced Flow Diagnostic Techniques
22	6:26	Krishanu Kumar	U Mich	Residence Time of Droplets Generated by Mechanically Forced Plunging Breaking Waves
23	6:39	Hojin Kim	Purdue	Generalizable data-driven turbulence closure modeling for separated flows via differentiable physics
24	6:52	Jincheng Wang	Iowa St	Effects of Surface Wettability on Droplet Impingement Dynamics on UAV Propellers under Freezing Rain Conditions
25	7:05	Devendra Neupane	Kent St	Adjoint-based Optimization of 2D Flapping Maneuvers for Hovering Flight
26	7:18	Leo Jimenez	ND	Supersonic Swirling Flow Characterization by Mie Scattering
⚡	7:30	Lightning Talks Session 3: Maximum 4 minutes, 3 slides each	U Cin	Ayaaz Yasin: Oscillations in Evaporating Films
⚡			U Cin	Emmett Looman: Image to Temperature: Processing Optical Thermometry
⚡			U Mich	Sathvik Bhat: Turbulence-induced breakup of cohesive particle aggregates
⚡			U Mich	Matt Hughes: Vapor Bubble Growth, Departure, and Sliding in Subcooled Flow Boiling
⚡			U Mich	Haotian Xie: Prostate Modeling

8:00 – 11:00pm **Evening Social Gathering**

----- **Saturday, April 11** -----

8:00 – 9:00am **BREAKFAST**

Session E: Chair: Kazuki Maeda, Purdue; KOTGOF: Steve Wereley, OU

Talk	Time	Speaker	School	Title
☺	8:50	Top Frog	☺	Announcements and Remarks
27	8:56	Elijah Sierra	MTU	Exact Closed-Form Solution for Fanno Flow of a Calorically Perfect Ideal Gas
28	9:09	Tahsin Enam	U Cin	Reading Between the Lines: Contactless Thermometry using Optical Interferometry
29	9:22	Skinder Dar	U Iowa	Manipulation of Turbulent Wake Flows Behind a Surface-piercing Bluff-body Using Synthetic Jet
30	9:35	Mohammed Imran Khan	MSU	Salt Crystallization and Lift-off during Brine Droplet Evaporation on Low Contact Angle Hysteresis Surface
31	9:48	Jasmine Chen	U Mich	The effects of surfactants on the breakup of droplets in the bag breakup regime
32	10:01	Taehong Kim	Purdue	Micro-centrifuge: Controlling coffee ring effect with surface acoustic waves on a patterned substrate

10:14 – 10:34am **COFFEE**

Session F: Chair: Cong Wang, U Iowa; KOTGOF: Xuanhong An, Kent St

Talk	Time	Speaker	School	Title
33	10:34	Md Ariful Islam	Iowa St	An Experimental Study of the Aerodynamic Performance Degradations of Iced UAV Propellers under Hover and Forward Flight Conditions
34	10:47	Kenad Sen	Purdue	Scalable Mesh-Adaptive Training of Deep Learning Surrogates for High-Speed Flow Simulation
35	11:00	Jiawei Chen	Iowa St	Transformer–diffusion modeling of unsteady flow over an iced airfoil
36	11:13	Bochang Wang	UIUC	Effects of insoluble surfactants on parametric instability of the interface between two fluids
37	11:26	Vincent DiFilippo	ND	Upstream Influence in Nonuniform Internal Flows
↗	11:39	Lightning Talks Session 4: Maximum 4 minutes, 3 slides each	IIT	Scott Dawson: Data-Driven Reduced-Complexity Modeling of Fluid Flows: A Community Challenge
↗			IIT	Min-Lin Tsai: Space-time resolvent model for near-wall flow reversal in time-evolving turbulent Couette–Poiseuille flow
↗			UIUC	Nick OBrien: Immersa: a GPU and auto-diff compatible immersed boundary code in Julia
↗			U Toledo	Priscilla Apreary: Effect of Surfactant Concentration on the Stability of Corona-Induced Emulsions
↗			MTU	Adam VanderMolen: MH61 Airfoil
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12:00pm – 1:00pm **CLOSING REMARKS, LUNCH**