



ASME FEDSM 2024

Fluids Engineering Division
Summer Meeting

Program

CONFERENCE
July 15-17, 2024

Hilton Anaheim
Anaheim, CA

<https://event.asme.org/FEDSM>

Welcome to FEDSM 2024!

DEAR ATTENDEES:

Welcome to the 2024 Fluids Engineering Division's (FED) Summer Meeting! We are thrilled to have you join us in Anaheim, California, for three full days of an exciting program. FED continues to strive to meet the challenges of disseminating timely technical information by organizing technical conferences and conducting workshops and panel discussions. This year the summer meeting is co-located with the ASME Heat Transfer and Energy Sustainability conferences. Last year FEDSM was joint, with the Japanese and Korean mechanical engineering societies (AJKFED2023) and held in Osaka, Japan, and two years ago FEDSM was joint, with the European community and held in Toronto, Canada. In addition, the FED also participates annually in the ASME International Mechanical Engineering Congress and Exposition each November.

FEDSM 2024 is truly international, which is evident in international participation, including 20 countries spanning five continents with over 200 presentations. The State-of-the-Art in the world of Fluids Engineering will be presented from industrial, academic, and governmental researchers.

This year, our FED plenary lectures feature the following:

- 2024 ASME Fluids Engineering Awardee, S. "Bala" Balachandar, University of Florida
- 2024 ASME Freeman Scholar, Suman Chakraborty, Indian Institute of Technology Kharagpur
- 2024 ASME Henry R. Worthington Medal Awardee, Phillip Ligrani, University of Alabama

Our conference is organized around our six technical committees: Fluid Applications and Systems, Fluid Measurement and Instrumentation, Fluid Mechanics, Multiphase Flow, Computational Fluid Dynamics, and Micro-Nano Fluid Dynamics. Our Awards Program recognizes Best-Papers, Flow-Visualization, Who's Who, and Graduate-Student Scholars and Returning Scholars.

We invite you to join us for the awards luncheon on Tuesday, where you will have the occasion to network with your peers and meet this year's award recipients. We also invite you to participate in the FED Towne Hall Meeting and in our Technical Committee meetings. It is during these meetings that you can really engage with your peers and become an active member to help shape the future of FED and future conferences.

We especially thank our track and topic organizers and reviewers who make FEDSM 2024 possible by inviting presenters, organizing sessions, and reviewing papers. We also thank the ASME staff who have worked tirelessly over the past several months to make this conference a success.

We very much look forward to meeting you in Anaheim, and we wish you a productive conference with fruitful technical discussions and networking opportunities with your peers in fluids, heat transfer, and energy sustainability. Thank you for your attendance and active participation.

FEDSM 2024 Conference Chair
Marianne Francois
Los Alamos National Laboratory

FEDSM 2024 Conference Co-Chair
Ning "Michael" Zhang
McNeese State University



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Conference Information



REGISTRATION INFORMATION

California Ballroom Foyer, Ballroom Level, Second Floor

Registration Hours:

Sunday, July 14, 10:00AM–6:00PM

Monday, July 15, 7:00AM–5:00PM

Tuesday, July 16, 7:00AM–5:00PM

Wednesday, July 17, 7:00AM–5:00PM

EXHIBIT INFORMATION

California Ballroom Foyer, Ballroom Level, Second Floor

Hours

Monday, July 15, 10:00AM–4:00PM

Tuesday, July 16, 10:00AM–4:00PM

Wednesday, July 17, 10:00AM–4:00PM

Don't forget to stop by and visit with our Exhibitors from Boeing, Carrier Corporation, NREL, the University of Maryland, the University of Minnesota, and Los Alamos National Laboratory. There sponsorship and support help to make our conference sustainable.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS INTERNATIONAL

ASME MISSION STATEMENT:

ASME's mission is to advance engineering for the benefit of humanity.

ASME VISION STATEMENT:

ASME's vision is to be the premier resource for the engineering community globally.

AUDIOVISUAL EQUIPMENT IN SESSION ROOMS

All technical sessions are equipped with one LCD projector and one screen. Laptops will NOT be provided in the sessions. Presenters MUST bring their own or make arrangements in advance with the session chairs to share theirs. A speaker ready room is available starting on Monday from 7:00AM to 5:00PM and until Wednesday at 4:00PM in the Green Room located on the Ballroom Level.

SPEAKER READY ROOM

The Green Room located on the Ballroom Level, Second Floor, will be available per the schedule below to review and/or practice your presentation. A screen and LCD Projector will be provided.

Sunday, July 14, 3:00PM–6:00PM

Monday, July 15, 7:00AM–5:00PM

Tuesday, July 16, 7:00AM–5:00PM

Wednesday, July 17, 7:00AM–3:00PM

BADGE REQUIRED FOR ADMISSION

All conference attendees must always wear the official ASME 2024 FEDSM/SHTC/ES badge to gain admission to technical sessions, exhibits, and other conference events. Without a badge, you will NOT be allowed to attend any conference activities.

CONFERENCE AWARD LUNCHEON

(One Award Lunch is included based on selection during the registration process.)

The Awards Luncheon will take place during the conference to recognize and celebrate a select group of individuals for their contributions and achievements in fluids engineering. The schedule is as follows:

Fluids Engineering Summer Meeting Awards Luncheon is on **Tuesday, July 16, 12:05PM–1:35PM** in **California Ballroom A**.

CONFERENCE LUNCHESES/POSTER PRESENTATIONS

On Monday and Wednesday, Conference lunches for all three conferences will be held from 12:05PM to 1:35PM in California Ballroom C & D located on the Ballroom Level, Second Floor. Please join your fellow attendees for a good meal and a great networking opportunity. Please note, on Monday, we will have the Poster Presentations as well during lunch. Grab a boxed lunch and join the Poster Presenters to support their hard work.

CONFERENCE APP

All three conferences will be utilizing the ASME Events mobile app to enhance the experience for attendees and speakers in place of a printed program. Connect with Attendees, View Speaker Profiles, Access Session Information, and more! Options may vary by event.

CONFERENCE PROCEEDINGS AND DIGITAL PAPERS

Each attendee will receive an email with a unique code to access digital copies of all the papers accepted for presentation at the conference. The official conference archival proceedings will be published after the conference and will not include accepted papers that were not presented at the conference. The official conference proceedings are registered with the Library of Congress, submitted for abstracting and indexing, and can be purchased. The proceedings are published in the ASME Digital Library. You will be provided with an individual link to the online papers via email. In the event you do not receive the email, you can message ConferencePubs@asme.org.

CONFERENCE REFRESHMENT BREAKS

Morning and afternoon breaks will be provided in the California Ballroom Foyer on the Ballroom Level, Second Floor. Come and meet our exhibitors, Carrier Corporation, Boeing, UMD, UMN, NREL, and Los Alamos National Laboratory and join your fellow attendees for a few minutes of networking and discussion. The schedule is as follows:

Monday–Wednesday, July 15–17
10:05AM–10:25AM and 3:15PM–3:35PM

EMERGENCY INFORMATION

If you are experiencing a health emergency, please dial 911. If you are able or someone else is able, please dial 22 and inform the Security personnel so that the hotel can be on the alert for the emergency response team. The hotel also has 24-hour security and officers trained in first aid, CPR, & AED service.

INTERNET ACCESS

Complimentary basic internet is provided in the sleeping rooms if you are staying at the Hilton Anaheim, in the hotel's public space, and in the meeting space.

Network: Hilton Honors
Password: 0724

MEMBERSHIP TO ASME (4 MONTHS FREE)

Registrants who paid the non-member conference registration fees will receive a four-month complimentary ASME Membership. ASME will automatically activate this complimentary membership for qualified attendees. Please allow approximately four weeks after the conclusion of the conference for your membership to become active.

Visit www.asme.org/membership for more information about the benefits of ASME Membership.

PRESENTER ATTENDANCE POLICY

According to ASME's Presenter Attendance Policy, if a paper is not presented at the conference, the paper will not be published in the official Archival Proceedings, which are registered with the Library of Congress and are abstracted and indexed. The paper also will not be published in the ASME Digital Collection and may not be cited as a published paper.

MOTHERS ROOM

Balboa C, Concourse Level, Fourth Floor

This private room is available on first-come, first-served basis as a comfortable space for nursing mothers. A small refrigerator, water station, and electrical outlets will be available.

PRAYER ROOM

Balboa A & B, Concourse Level, Fourth Floor

REGISTRANTS WITH DISABILITIES

Whenever possible, we are pleased to plan for registrants with disabilities. Advance notice may be required for certain requests. For on-site assistance, please visit the conference registration area and ask to speak with a conference representative.

HILTON ANAHEIM PARKING

Current Parking Charges:

Self-Parking

\$6.00 for first hour; \$2.00 per half hour after that \$20.00 Daily Max (no overnight)

Self-Parking (with in & out privileges)

\$24.00 per day (Guests only)

Valet Parking (with in & out privileges)

\$39.00 per day

Schedule at a Glance

Full schedule and session details can be found on the conference app.

TIME	EVENT	ROOM
SUNDAY, JULY 14		
11:00AM–2:00PM	Executive Committee Meeting (Closed)	San Simeon B
2:00PM–5:00PM	Executive Committee Meeting w/TC Chairs (Closed)	San Simeon B
6:00PM–7:30PM	Opening Reception	California Ballroom A/B
MONDAY, JULY 15		
8:00AM–9:00AM	Plenary 1: ASME Henry R. Worthington Medal Dr. Phillip M. Ligrani	California Ballroom A
9:05AM–10:05AM	FED Town Hall Assembly	California Ballroom A
10:05AM–10:25AM	Refreshment Break	California Foyer
10:25AM–12:05PM	Technical Sessions FASTC 01-07-01 FMTC 03-01-01 MFTC 04-03-01 MNFDC 06-02-01 CFDTC 05-01	Huntington A Huntington B Huntington C Carmel San Simeon B
12:05PM–1:35PM	Lunch & Poster Sessions	California Ballroom C/D
12:05PM–1:05PM	FED Honors/Awards Meeting	Huntington A
12:35PM–1:35PM	Graduate Student Scholars and Committee Meeting	Huntington B
1:35PM–3:15PM	Technical Sessions FASTC 01-07-02 FMTC 03-01-02 MFTC 04-10-01 MNFDC 06-02-02 CFDTC 05-02	Huntington A Huntington B Huntington C Carmel San Simeon B
3:15PM–3:35PM	Refreshment Break	California Foyer
3:35PM–5:15PM	Technical Sessions FASTC 01-04-01 MFTC 04-10-02 MNFDC 06-01 CFDTC 05-03	Huntington A Huntington C Carmel San Simeon B
5:20PM–6:20PM	FED FMTC Meeting	Huntington A
6:25PM–7:25PM	FED CFDTC Meeting	Huntington A
7:30PM–8:30PM	FED FMTC Meeting	Huntington A

Full schedule and session details can be found on the conference app.

TIME	EVENT	ROOM
TUESDAY, JULY 16		
8:00AM–9:00AM	Technical Sessions FASTC 01-01-05 FMTC 03-10 MFTC 04-04-01 CFDTC 05-07-01 CFDTC 05-06	Huntington A Huntington B Huntington C Carmel San Simeon B
9:05AM–10:05AM	Plenary 2: ASME Freeman Scholar Award Suman Chakraborty	California Ballroom A
10:05AM–10:25AM	Refreshment Break	California Foyer
10:25AM–12:05PM	Technical Sessions FASTC 01-01-01 FMTC 03-08-01 MFTC 04-02 CFDTC 05-07-02 CFDTC 05-04	Huntington A Huntington B Huntington C Carmel San Simeon B
12:05PM–1:35PM	FEDSM Award Lunch	California Ballroom A
1:35PM–3:15PM	Technical Sessions FASTC 01-01-02 FMTC 3-5 MFTC 04-09-01 FMITC 02-01 CFDTC 05-05	Huntington A Huntington B Huntington C Carmel San Simeon B
3:15PM–3:35PM	Refreshment Break	California Foyer
3:35PM–5:15PM	Technical Sessions Funding Program Managers Panel FASTC 01-01-04 FMTC 3-9 MFTC 04-09-02 FMITC 02-02 CFDTC 05-08	California Ballroom B Huntington A Huntington B Huntington C Carmel San Simeon B
5:20PM–6:20PM	FED FASTC Meeting	Huntington A
6:25PM–7:25PM	FED MNFDTC Meeting	Huntington A
7:30PM–8:30PM	FED MFTC Meeting	Huntington A

Schedule at a Glance

Full schedule and session details can be found on the conference app.

TIME	EVENT	ROOM
WEDNESDAY, JULY 17		
8:00AM–9:00AM	Plenary 3: ASME Fluids Engineering Award Dr. Balachandar	California Ballroom A
9:05AM–10:05AM	Technical Sessions FASTC 01-02-01 FMTC 3-02 MFTC 04-04-02 MFTC 04-01	Huntington A Huntington B Huntington C Carmel
10:05AM–10:25AM	Refreshment Break	California Foyer
10:25AM–12:05PM	Technical Sessions FASTC 01-02-02 FMTC 3-4 MFTC 04-08 MFTC 04-07-01 CFDTC 05-09	Huntington A Huntington B Huntington C Carmel San Simeon B
12:05PM–1:35PM	Lunch	California Ballroom C/D
1:35PM–3:15PM	Technical Sessions 100th Anniversary Committee Meeting (1:35PM - 2:35PM) FASTC 01-02-03 MFTC 04-06-01 MFTC 04-07-02 CFDTC 05-10	Huntington B Huntington A Huntington C Carmel San Simeon B
3:15PM–3:35PM	Refreshment Break	California Foyer
3:35PM–5:15PM	Technical Sessions MFTC 04-06-02 CFDTC 05-11	Huntington C San Simeon B
5:20PM–6:20PM	JFE Board Meeting	Huntington A
6:25PM–7:25PM	Fluids Engineering Division Executive Committee w/TCs Closed Meeting	Huntington A
7:30PM–8:30PM	Fluids Engineering Division Executive Committee Closed Meeting	Huntington A

PLENARY 1: ASME HENRY R. WORTHINGTON MEDAL

MONDAY, JULY 15

8:00AM–9:00AM

CALIFORNIA BALLROOM A



Dr. Phillip M. Ligrani

*Professor of Mechanical and Aerospace Engineering,
Eminent Scholar in Propulsion
University of Alabama in Huntsville*

Presentation Title: Development of Innovative and Unique Pumping Concepts and Devices with Micro-, Millimeter-, and Macro-Scale Flow Passage Arrangements

Biography: Dr. Phil Ligrani is currently the Eminent Scholar in Propulsion, and Professor of Mechanical and Aerospace Engineering in the College of Engineering at The University of Alabama in Huntsville. Prior to August 2014, Dr. Phil Ligrani was the Oliver L. Parks Endowed Chair, and Professor of Aerospace and Mechanical Engineering at Saint Louis University. Prior to that appointment, he was the Donald Schultz Professor of Turbomachinery in the Department of Engineering Science at the University of Oxford. There, from 2006 to 2009, he was also Director of Oxford University's Rolls-Royce UTC (University Technology Centre) in Heat Transfer and Aerodynamics. From 1994 to 2006, he was a Professor of Mechanical Engineering, Director of the Convective Heat Transfer Laboratory, and Associate Department Chair in the Department of Mechanical Engineering at the University of Utah. Research interests include turbomachinery, convective heat transfer, fluid mechanics, transonic, supersonic, and hypersonic flows, as well as micro-fluidics, and measurement technologies. He has received numerous academic awards and recognitions from the University of Alabama in Huntsville, as well as from the American Institute of Aeronautics and Astronautics, and the American Society of Mechanical Engineers. He is also currently a member of the European Union Academy of Sciences (EUAS).

PLENARY 2: ASME FREEMAN SCHOLAR AWARD

TUESDAY, JULY 16

9:05AM–10:05AM

CALIFORNIA BALLROOM A



Suman Chakraborty

*Department of Mechanical Engineering,
Indian Institute of Technology Kharagpur*

Presentation Title: Fluid Dynamics and Cardiovascular Health - Perspectives from on-Chip Devices and Patient-Specific Simulations

Biography: Suman Chakraborty is a Professor in the Mechanical Engineering Department of the Indian Institute of Technology Kharagpur, India, and Sir J. C. Bose National Fellow as bestowed by the Department of Science and Technology, Government of India, and a recent winner of the National Award for Teachers presented by the Hon. President of India. He has been Institute Chair Professor, the Head of the School of Medical Science and Technology, and the Dean of Research and Development. His current areas of research include micro-fluidics, nanofluidics, micro-nano scale transport, with particular focus on biomedical applications including medical diagnostic technology for affordable healthcare. He is the winner of the coveted Infosys Prize in the category of Engineering & Computer Science in 2022, and the recipient of the Santi Swaroop Bhatnagar Prize in the year 2013, which is the highest Scientific Award from the Government of India. He has been elected as a Fellow of the American Physical Society, Fellow of the Royal Society of Chemistry, Fellow of ASME, Fellow of all the Indian National Academies of Science and Engineering, recipient of the G. D Birla Award for Scientific Research, National Academy of Sciences India – Reliance Industries Platinum Jubilee Award for Application Oriented Research, Rajib Goyal Prize for Young Scientists, Indo-US Research Fellowship, Scopus Young Scientist Award for high citation of his research in scientific/technical Journals, and Young Scientist/Young Engineer Awards from various National Academies of Science and Engineering, and recipient of Outstanding Teacher Award from the Indian National Academy of Engineering. He has also been an Alexander von Humboldt Fellow and a visiting Professor at various leading Universities abroad. He has a large volume of impactful publications in top International Journals (525+) with high citations (15,000+) as well as patents/licensed technologies and a unique expertise in technology development for the under-served population and community health-care.

PLENARY 3: ASME FLUIDS ENGINEERING AWARD

WEDNESDAY, JULY 17

8:00AM–9:00AM

CALIFORNIA BALLROOM A



S. "Bala" Balachandar

*Professor of Mechanical & Aerospace Engineering
Director of College of Engineering Institute for
Computational Engineering
University of Florida*

Presentation Title: Using Machine Learning as an Expert Instrument for Unprecedented Advances in Multiscale Modeling of Multiphase Flows

Biography: S. "Bala" Balachandar got his undergraduate degree in Mechanical Engineering at the Indian Institute of Technology, Madras in 1983, and his M.S. and Ph.D. in Applied Mathematics and Engineering at Brown University in 1985 and 1989. From 1990 to 2005, he was at the University of Illinois, Urbana-Champaign, in the Department of Theoretical and Applied Mechanics. From 2005 to 2011, he served as the Chairman of the Department of Mechanical and Aerospace Engineering at the University of Florida. Currently, he is a distinguished professor at the University of Florida. He is the Newton C. Ebaugh Professor of Mechanical & Aerospace Engineering and the Director of the College of Engineering Institute for Computational Engineering. Bala received the Francois Naftali Frenkiel Award from American Physical Society (APS) Division of Fluid Dynamics (DFD) in 1996 and the Arnold O. Beckman Award and the University Scholar Award from University of Illinois. He is Fellow of ASME and the American Physical Society Division of Fluid Dynamics. He was the recipient of ASME Freeman Fellowship Award (2017), Gad Hetsroni Senior Researcher Award from ICMF (2019), Outstanding Alumnus Award from the Indian Institute of Technology, Madras (2019), Outstanding Doctoral Mentoring Award from the University of Florida (2020), Thermal Fluids Engineering Award from the American Society of Thermal Fluids Engineers (2022), and University of Florida Research Foundation Professorship (2023). He is currently the co-editor-in-chief of the International Journal of Multiphase Flow and an associate editor of Theoretical and Computational Fluid Dynamics.

Track Keynotes are speakers that will be highlighted within a specific track. The speaker will be presenting for an extended time and occur during a regular breakout technical session.

FLUID MECHANICS TECHNICAL COMMITTEE TRACK (FMTC)

MONDAY JULY 15 10:25AM
HUNTINGTON B

Dr. Ganesh Raman

*Assistant Vice Chancellor for Research; California State University (CSU)
Office of the Chancellor*

FLUID APPLICATIONS & SYSTEMS (FASTC)

TUESDAY JULY 16 10:25AM
HUNTINGTON A

Dr. Ting Wang

Director of Energy Conversion and Conservation Center (ECCC) - Jack & Reba Matthey Endowed Chair; Professor, Department of Mechanical Engineering

MULTIPHASE FLOW TRACK (MFTC)

TUESDAY JULY 16 10:25AM
HUNTINGTON C

Dr. Xiaofeng Liu

Associate Professor, AE Graduate Advisor; Department of Aerospace Engineering, San Diego State University

FLUID MEASUREMENT & INSTRUMENTATION TECHNICAL COMMITTEE (FMITC)

TUESDAY JULY 16 1:35PM
CARMEL

Todd Lowe

Professor, Kevin T. Crofton Dept. of Aerospace & Ocean Engineering; Director of Pratt & Whitney Center of Excellence, Virginia Tech

Committee Meetings

TIME	EVENT	ROOM
SUNDAY, JULY 14		
11:00AM–2:00PM	Opening FED Executive Committee (Closed)	San Simeon B
2:00PM–5:00PM	Executive Committee w/TC Chairs (Closed)	San Simeon B
MONDAY, JULY 15		
12:05PM–1:05PM	Honors & Awards Committee	Huntington A
12:35PM–1:35PM	Graduate Student Scholars and Committee Meeting	Huntington B
5:20PM–6:20PM	FMTC Fluid Mechanics Technical Committee	Huntington A
6:25PM–7:25PM	CFDTC Computational Fluid Dynamics Technical Committee	Huntington A
7:30PM–8:30PM	FMITC Fluid Measurement & Instrumentation Technical Committee	Huntington A
TUESDAY, JULY 16		
5:20PM–6:20PM	FASTC Fluid Applications and Systems Technical Committee	Huntington A
6:25PM–7:25PM	MNFDTC Micro Nano Fluid Dynamics Technical Committee: Huntington A	Huntington A
7:30PM–8:30PM	MFTC Multiphase Flow Technical Committee: Huntington A	Huntington A
WEDNESDAY, JULY 17		
1:35PM–2:35PM	100th Anniversary Committee Meeting	Huntington B
5:20PM–6:20PM	JFE Board Meeting	Huntington A
6:25PM–7:25PM	Closing EC w/TC Chairs (Closed)	Huntington A
7:30PM–8:30PM	Closing EC Executive Committee (Closed)	Huntington A

* FED Advisory Committee Meeting will be held July 25th 5:00pm-6:00pm eastern time via Zoom. The Committee chair will send a link to invitees.

PPAER NUMBER	LAST NAME	FIRST NAME	TRACK/SESSION
130876	Khanmohammadi	Abbas	04-06-02: Gas-Solid Flows
138195	Shuvo	Abdul Aziz	06-02-01: Simulation, Design, Fabrication, Analysis, and Technology for Micro and Nano Fluidic Systems
121354	Aboelezz	Ahmed	05-02: Applied CFD
132822	Kumar	Ajaya	01-01-02 Fluid Machinery Symposium
131405	Menzer	Alec	01-01-04 Fluid Machinery Symposium
132969	Menzer	Alec	05-09: Fluid Structure Interaction
138418	Yurishchev	Alexander	04-04-01: Gas-Liquid Flows
123929	Guney	Aleyna	03-08-01: Turbulent Flows
131252	Guney	Aleyna	03-09: Vortex Dynamics
131987	Maidenberg	Amandine	05-07-01: CFD Development, V&V
131340	Isazadeh	Amin	04-04-02: Gas-Liquid Flows
130877	Anvari	Amirmasoud	04-06-01: Gas-Solid Flows
131065	Baum	Andreas	01-02-01 Pumping Machinery Symposium
131069	Baum	Andreas	01-02-03 Pumping Machinery Symposium
124115	Fershalov	Andrei	03-05: Boundary Layer Flows/Fluid-Structure Interaction
130835	Hayden	Andrew	02-01 Data Processing / Algorithms in Fluid Measurements
130975	Fleder	Annika	01-02-02 Pumping Machinery Symposium
131920	Javadi	Ardalan	05-08: DNS, LES and Hybrid-RANS/LES Methods
131451	Rodriguez	Arturo	03-05: Boundary Layer Flows/Fluid-Structure Interaction
122616	Obeid	Bachar	03-08-01: Turbulent Flows
131170	Xu	Ben	04-07-01: Interfacial Phenomena and Flows
130493	Rode	Bhushan	03-10: Fluid Power
131009	Khusid	Boris	06-02-01: Simulation, Design, Fabrication, Analysis, and Technology for Micro and Nano Fluidic Systems
130787	Emeigh	Carson	06-02-02: Simulation, Design, Fabrication, Analysis, and Technology for Micro and Nano Fluidic Systems
142444	Hsiao	Chao-Tsung	04-09-01: Multiphase Flows in Industrial Applications
130681	Kellogg	Cody	04-04-01: Gas-Liquid Flows
131381	Simmonds	Cole	05-08: DNS, LES and Hybrid-RANS/LES Methods
130081	Marchioli	Cristian	04-03-01: Cavitation
130138	Marchioli	Cristian	04-04-01: Gas-Liquid Flows
131002	Beck	David	01-01-04 Fluid Machinery Symposium
137469	Puga	Diana	04-03-01: Cavitation
142423	Perez	Dorianis	04-10-01: Transformative Modeling of Flows Under Extreme Conditions

Author Index

PPAER NUMBER	LAST NAME	FIRST NAME	TRACK/SESSION
130520	Zonta	Dr. Francesco	04-07-01: Interfacial Phenomena and Flows
141621	Khalifa	Dr. Mohammed A. Elhashimi	01-01-02 Fluid Machinery Symposium
131145	Fallah Shojaie	Elham	05-07-02: CFD Development and V&V
132966	Malof	Emanuel	05-06: Multi-Physics Simulation
138569	Stallbaumer-Cyr	Emily	01-01-04 Fluid Machinery Symposium
131425	Moreno	Esperanza	06-02-02: Simulation, Design, Fabrication, Analysis, and Technology for Micro and Nano Fluidic Systems
131186	Rousta	Farid	04-01: Numerical Methods for Multiphase Flows
131188	Rousta	Farid	04-09-01: Multiphase Flows in Industrial Applications
131003	Biglari	Farshad	05-03: Applied CFD
135778	Brandao	Filipe	04-10-01: Transformative Modeling of Flows Under Extreme Conditions
136418	Khan	Firoz	03-10: Fluid Power
122110	Brokhausen	Florian	01-02-02 Pumping Machinery Symposium
130436	Zonta	Francesco	04-07-02: Interfacial Phenomena and Flows
130069	Demoulin	François Xavier	04-04-02: Gas-Liquid Flows
132129	Ferguson	Frederick	05-04: Applied CFD
130318	Rodrigues	Frederico	03-04: Flow Applications in Aerospace/High-Speed Flows
130687	Rodrigues	Frederico	05-02: Applied CFD
130222	Raman	Ganesh	03-01-01: Advances in Fluids Engineering Education
131123	Schneider	Gerry	01-07-01 Industrial Fluid Mechanics
130679	Ahmadi	Goodarz	04-06-01: Gas-Solid Flows
130803	Ahmadi	Goodarz	04-06-02: Gas-Solid Flows
131327	Islam	Hafizul	04-07-01: Interfacial Phenomena and Flows
131036	Zhang	Haipeng	04-07-02: Interfacial Phenomena and Flows
129793	Rahai	Hamid	05-01: Applied CFD
131088	Sarlak	Hamid	05-08: DNS, LES and Hybrid-RANS/LES Methods
123826	Witte	Hauke	01-01-01 Fluid Machinery Symposium
131918	Mao	Huachao	01-07-02 Industrial Fluid Mechanics
130079	Tang	Hui	01-07-01 Industrial Fluid Mechanics
141080	Yu	Huidan (Whitney)	05-07-02: CFD Development and V&V
138429	Alhussein	Hussam	05-11: Data Driven and Machine Learning Methods and Models, and Optimization

PPAER NUMBER	LAST NAME	FIRST NAME	TRACK/SESSION
130618	Gryshanova	Iryna	02-02 Fluid Measurement and Instrumentation/Novel Experimental Techniques in Fluid Mechanics
142310	Bermejo-Moreno	Ivan	04-10-02: Transformative Modeling of Flows Under Extreme Conditions
122894	Milanovic	Ivana	03-01-01: Advances in Fluids Engineering Education
142352	Herrin	Jake	04-10-01: Transformative Modeling of Flows Under Extreme Conditions
131351	Sun	Jason	01-07-02 Industrial Fluid Mechanics
128524	Kranenbarg	Jelle	01-01-02 Fluid Machinery Symposium
142416	Canfield	Jesse	04-10-01: Transformative Modeling of Flows Under Extreme Conditions
131341	Guo	Jiacheng	05-09: Fluid Structure Interaction
130913	Liu	Jie	06-01: Applications of Micro and Nano Fluid Systems in Medicine and Biology
130936	Ma	Jingsen	04-01: Numerical Methods for Multiphase Flows
131534	Xi	Jinxiang	FEDSM Posters
132449	Kim	JiYeon	01-04-01 Renewable Energy
131305	Marziale	Joseph	05-07-02: CFD Development and V&V
130246	Kim	Joshua Joohyen	01-02-02 Pumping Machinery Symposium
130472	Kim	Joshua Joohyen	01-02-02 Pumping Machinery Symposium
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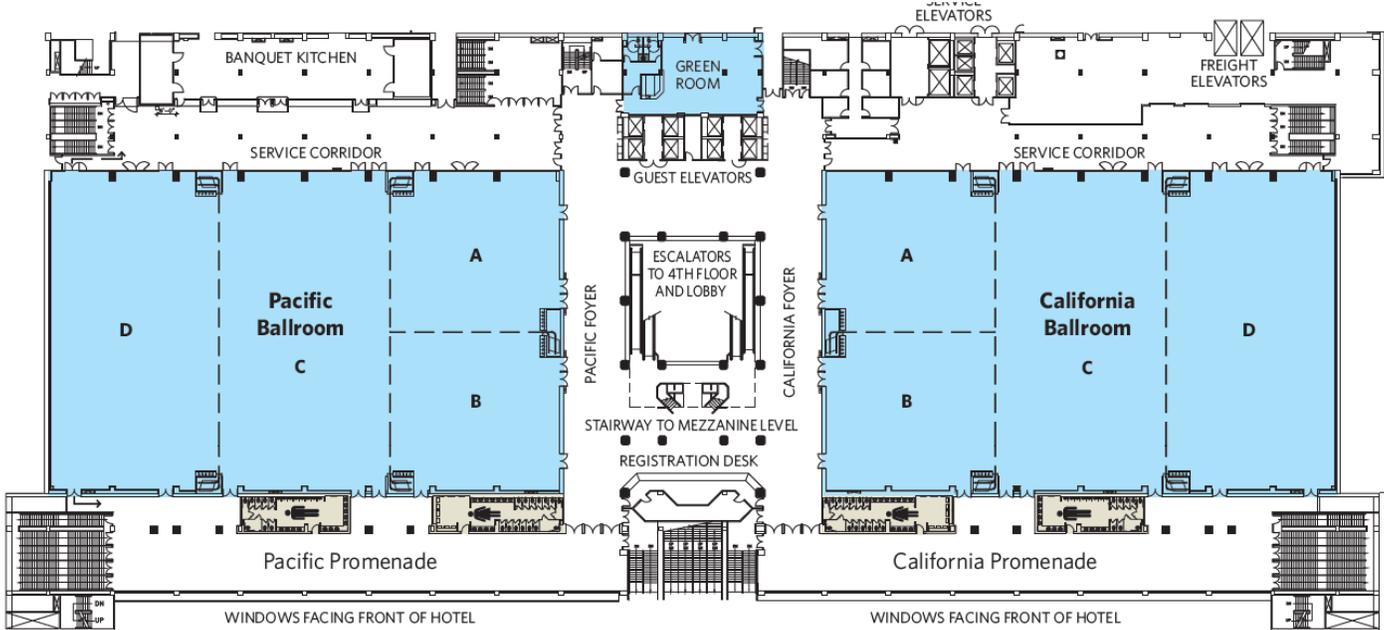
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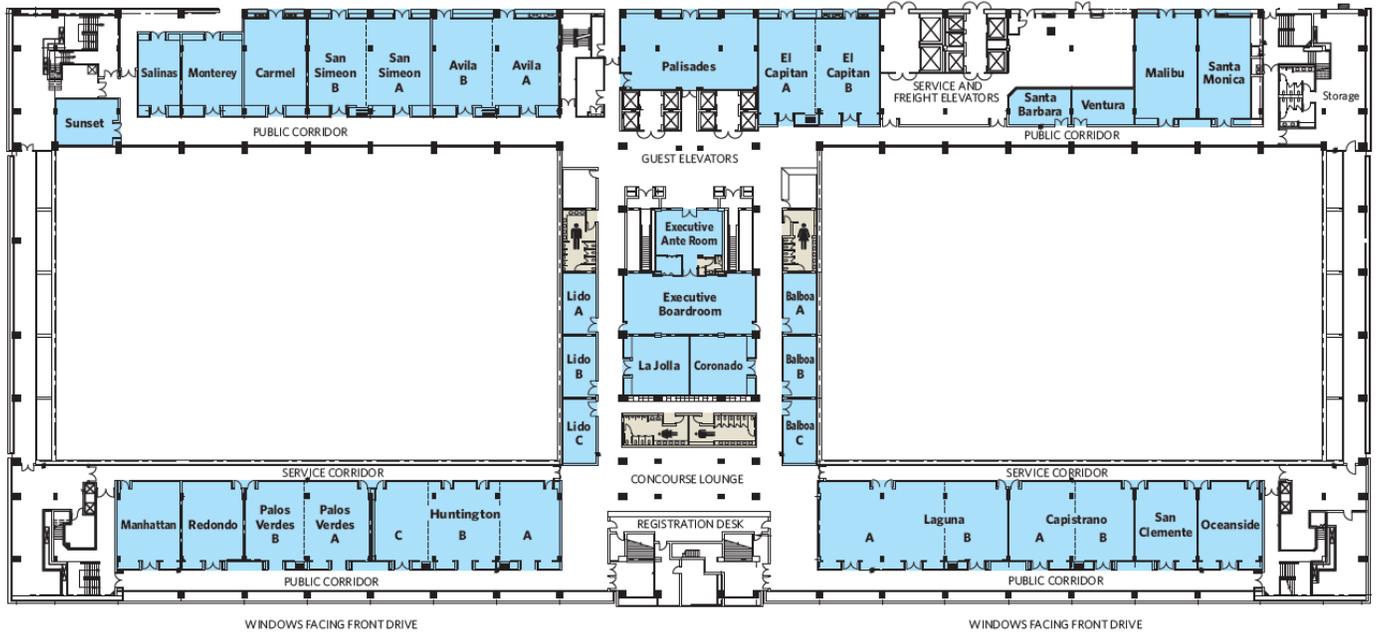
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