TSFP14

14th International Symposium on

Turbulence and Shear Flow Phenomena

28–31 July 2026
Heidelberg, Germany

Photo: Tobias Schwerdt/Heidelberg Marketing

Welcome

The Local Organizing Committee warmly welcomes you to both the 14th International Symposium on Turbulence and Shear Flow Phenomena (TSFP14) and the city of Heidelberg. This charming and scenic city boasts a rich history. Heidelberg is also a favoured tourist spot, renowned for its magnificent castle, the romantic medieval old town, and its stunning setting along the Neckar river, nestled between the scenic Odenwald low mountain range and the Rhine plain. The biennial TSFP symposia serve as the main platform for presenting and sharing the latest research on turbulence and shear flow phenomena. Past successful TSFP meetings have been held in Santa Barbara, California (1999), Stockholm, Sweden (2001), Sendai, Japan (2003), Williamsburg, Virginia (2005)†, Munich, Germany (2007), Seoul, Korea (2009), Ottawa, Canada (2011), Poitiers, France (2013), Melbourne, Australia (2015), Chicago, USA (2017), Southampton, UK (2019), Osaka, Japan (2022), and Montreal, Canada (2024).

A total of 534 extended abstracts were submitted for TSFP14. Each was reviewed by at least two independent members of the TSFP Advisory Committee. Based on the reviewers' evaluations, 255 papers were chosen for oral presentations and another 50 for poster presentations. Alongside these 305 presentations, six invited lectures will be featured. The opening lecture will be delivered by the TSFP14 Kasagi Award recipient: R. Jason Hearst (Norwegian University of Science and Technology, Trondheim, Norway). The other five invited speakers include: Bérengère Dubrulle (National Centre for Scientific Research Paris Saclay, France), Rama Govindarajan (Tata Institute of Fundamental Research, India), Megan Leftwich (George Washington University, USA), Florian Menter (Ansys Germany GmbH, Germany), and Carlos Pantano-Rubino (University of Southern California, USA).

We trust you will discover a wealth of fascinating research in turbulence and shear flow phenomena throughout the 76 sessions and poster session. These will showcase a broad range of topics within our field, including (but not limited to) Aerodynamics and acoustics, Biofluids, Coherent structures, Compressible flows, Drag reduction & flow control, Environmental flows, Heat & mass transfer, Homogeneous turbulence, Instability & transition, Jets, wakes & separated flows, LES & DNS, Machine learning & data-driven modelling, Multiphase flows, Reacting flows, Rough & porous walls, Stratification & buoyancy, Turbulence modelling, Turbulent boundary layers & wall-bounded turbulence, and Turbulence theory.

Our sincere gratitude goes to the members of the Executive and Advisory Committees for their dedication and guidance in all areas. We also value the support given by the City of Heidelberg and our sponsors. Special recognition is due to everyone from 38 countries who contributed to the conference, and of course to the participants. We wish you an inspiring and engaging symposium and a wonderful time in Heidelberg!

The TSFP14 Local Organizing Committee
Martin Oberlack (Chair), Bettina Frohnapfel, Suad Jakirlic, Markus Uhlmann, Yongqi Wang, Kilian Wilhelm

TSFP Committees

Executive Committee

Beverley McKeon, *Stanford University, USA* – (Chair)
Koji Fukagata, *Keio University, Japan*
Bharathram Ganapathisubramani, *University of Southampton, UK*
Martin Oberlack, *Technical University of Darmstadt, Germany*
Stavros Tavoularis, *University of Ottawa, Canada*

Kasagi Award Subcommittee

Bharathram Ganapathisubramani, *University of Southampton, UK* – (Chair)
Bettina Frohnapfel, *Karlsruhe Institute of Technology, Germany*
Genta Kawahara, *Osaka University, Japan*
Ugo Piomelli, *Queen's University, Canada*
Ricardo Vinuesa, *KTH Royal Institute of Technology, Sweden*

Local Organizing Committee

Martin Oberlack, *Technical University of Darmstadt, Germany* – (Chair)
Bettina Frohnapfel, *Karlsruhe Institute of Technology, Germany*
Suad Jakirlic, *Technical University of Darmstadt, Germany*
Markus Uhlmann, *Karlsruhe Institute of Technology, Germany*
Yongqi Wang, *Technical University of Darmstadt, Germany*
Kilian Vinzenz Wilhelm, *Technical University of Darmstadt, Germany*

Program Overview

(time, session number: session title, *location*)

Monday, 27 July

3:00pm – 8:00pm Registration

Tuesday, 28 July

7:00am – 10:00am	Registration
8:30am – 9:00am	Opening Ceremony
9:00am – 9:50am	1: Kasagi Award Lecture (Invited 1) R. Jason Hearst (NTNU, Norway) *Hall 2*
10:00am – 11:00am Parallel sessions	2A: Turbulent boundary layers & wall-bounded turbulence 1 *Hall 2* 2B: Jets, wakes & separated flows 1 *Forum 1A* 2C: Coherent structures 1 *Forum 1B* 2D: Turbulence theory 1 *Forum 2* 2E: Turbulence modelling 1 *Forum 3A&B*
11:00am – 11:20am	Coffee Break
11:20am – 12:40pm Parallel sessions	3A: Turbulent boundary layers & wall-bounded turbulence 2 *Hall 2* 3B: Jets, wakes & separated flows 2 *Forum 1A* 3C: LES & DNS 1 *Forum 1B* 3D: Instability & transition 1 *Forum 2* 3E: Homogeneous turbulence 1 *Forum 3A&B*
12:40pm – 1:30pm	Lunch
1:30pm – 2:30pm	4: Humphrey Lecture (Invited 2) Megan Leftwich (GWU, USA) *Hall 2*
2:40pm – 4:00pm Parallel sessions	5A: Turbulent boundary layers & wall-bounded turbulence 3 *Hall 2* 5B: Coherent structures 2 *Forum 1A* 5C: Biofluids *Forum 1B* 5D: ML & data-driven modelling 1 *Forum 2* 5E: Aerodynamics & acoustics 1 *Forum 3A&B*
4:00pm – 4:30pm	Coffee Break
4:30pm – 5:30pm Parallel sessions	6A: Turbulent boundary layers & wall-bounded turbulence 4 *Hall 2* 6B: Jets, wakes & separated flows 3 *Forum 1A* 6C: Coherent structures 3 *Forum 1B* 6D: LES & DNS 2 *Forum 2* 6E: Drag reduction & flow control 1 *Forum 3A&B*
6:00pm – 8:00pm	Welcome Reception, *HCC Level 0*

Wednesday, 29 July

8:30am – 9:20am	7: Invited Lecture 3 Bérengère Dubrulle (CNRS, France) *Hall 2*
9:30am – 10:50am Parallel sessions	8A: Turbulent boundary layers & wall-bounded turbulence 5 *Hall 2* 8B: Jets, wakes & separated flows 4 *Forum 1A* 8C: LES & DNS 3 *Forum 1B* 8D: Multiphase flows 1 *Forum 2* 8E: Turbulence theory 2 *Forum 3A&B*
10:50am – 11:10am	Coffee Break
11:10am – 12:30pm Parallel sessions	9A: Turbulent boundary layers & wall-bounded turbulence 6 *Hall 2* 9B: Coherent structures 4 *Forum 1A* 9C: Instability & transition 2 *Forum 1B* 9D: Drag reduction & flow control 2 *Forum 2* 9E: Multiphase flows 2 *Forum 3A&B*
12:30pm – 1:30pm	Lunch
1:30pm – 2:20pm	10: Invited Lecture 4 Rama Govindarajan (ICTS, India) *Hall 2*

Wednesday, 29 July

	11A: Turbulent boundary layers & wall-bounded turbulence 7 *Hall 2*
2:30pm – 3:50pm Parallel sessions	11B: Coherent structures 5 *Forum 1A* 11C: LES & DNS 4 *Forum 1B* 11D: Rough & porous walls 1 *Forum 2* 11E: ML & data-driven modelling 2 *Forum 3A&B*
3:50pm – 4:20pm	Coffee Break
	12A: Turbulent boundary layers & wall-bounded turbulence 8 *Hall 2*
4:20pm – 5:20pm Parallel sessions	12B: Jets, wakes & separated flows 5 *Forum 1A* 12C: Coherent structures 6 *Forum 1B* 12D: LES & DNS 5 *Forum 2* 12E: Turbulence theory 3 *Forum 3A&B*
6:00pm	Bus transfer for Dinner
7:00pm – 10:00pm	Banquet Dinner *Heidelberg Castle*

Thursday, 30 July

9:00am – 9:50am	13: Invited Lecture 5 Carlos Pantano (USC, USA) *Hall 2*
	14A: Turbulent boundary layers & wall-bounded turbulence 9 *Hall 2*
10:00am – 11:00am Parallel sessions	14B: Jets, wakes & separated flows 6 *Forum 1A* 14C: Instability & transition 3 *Forum 1B* 14D: Multiphase flows 3 *Forum 2* 14E: Rough & porous walls 2 *Forum 3A&B*
11:00am – 11:20am	Coffee Break
	15A: Turbulent boundary layers & wall-bounded turbulence 10 *Hall 2*
11:20am – 12:40pm Parallel sessions	15B: Jets, wakes & separated flows 7 *Forum 1A* 15C: Coherent structures 7 *Forum 1B* 15D: LES & DNS 6 *Forum 2* 15E: Environmental flows 1 *Forum 3A&B*
12:40pm – 1:30pm	Lunch
1:30pm – 2:20pm	16: Invited Lecture 6 Florian Menter (Ansys, Germany) *Hall 2*
	17A: Turbulent boundary layers & wall-bounded turbulence 11 *Hall 2*
2:30pm – 3:50pm Parallel sessions	17B: Drag reduction & flow control 3 *Forum 1A* 17C: Multiphase flows 4 *Forum 1B* 17D: Rough & porous walls 3 *Forum 2* 17E: Turbulence modelling 2 *Forum 3A&B*
3:50pm – 5:00pm	18: Poster Interact + Coffee Break
	19A: ML & data-driven modelling 3 *Hall 2*
5:00pm – 6:00pm Parallel sessions	19B: Aerodynamics and acoustics 2 *Forum 1A* 19C: Homogeneous turbulence 2 *Forum 1B* 19D: Heat & mass transfer 1 *Forum 2* 19E: Environmental flows 2 *Forum 3A&B*

Friday, 31 July

	20A: Instability & transition 4 *Hall 2*
8:30am – 9:50am Parallel sessions	20B: Rough & porous walls 4 *Forum 1A* 20C: Heat & mass transfer 2 *Forum 1B* 20D: Compressible flows & reacting flows *Forum 2* 20E: Stratification & buoyancy *Forum 3A&B*
9:50am – 10:10am	Coffee Break
	21A: Turbulence theory 4 *Hall 2*
10:10am – 11:30am Parallel sessions	21B: Turbulence modelling 3 *Forum 1A* 21C: Aerodynamics and acoustics 3 *Forum 1B* 21D: Compressible flows *Forum 2* 21E: Drag reduction & flow control 4 *Forum 3A&B*
11:30am – 12:00pm	Closing Ceremony

TSFP Nobuhide Kasagi Award

TSFP presents the Nobuhide Kasagi Award, with the following purpose:

"The TSFP Nobuhide Kasagi Award will recognise excellence and innovation for early career researchers for contributions to an area relevant to the TSFP Symposia." The TSFP Nobuhide Kasagi Award is graciously sponsored by the International Journal of Heat and Fluid Flow.

The TSFP14 Kasagi Award goes to Jason Hearst, in recognition of his pioneering experiments revealing how free stream turbulence affects mass and momentum transport in boundary layers, wakes and the air-water interface.

About the award

Nobuhide Kasagi was a founding member of the TSFP symposium series. The award was established after his untimely death in 2015. The TSFP Nobuhide Kasagi Award will recognize excellence and innovation for early career researchers (typically less than 10 years after PhD) for contributions to an area relevant to the TSFP Symposia. From TSFP12, the TSFP Nobuhide Kasagi Award is sponsored by International Journal of Heat and Fluid Flow for which Prof. Kasagi served as the Editor-in-Chief for many years.

Advisory Committee

Hiroyuki Abe
Ken-ichi Abe
Sourabh Apte
Vincenzo Armenio
Woutijn Baars
Sean Bailey
Christophe Bailly
Elias Balaras
Donald Bergstrom
Bjorn Birnir
Daniel Bodony
Jean Paul Bonnet
Jacques Borée
Wouter Bos
Demetri Bouris
Luca Brandt
Geert Brethouwer
Angela Busse
Oliver Buxton
Kapil Chauhan
Haecheon Choi
Daniel Chung
Yongmann Chung
Paola Cinnella
Filippo Coletti
Rishita Das
Lars Davidson
Scott Dawson
Sourabh S. Diwan
Shivsai Dixit
Julian Domaradzki
Paul Durbin
Ebenezer Ekow Essel
Jochen Fröhlich
Bettina Frohnapfel
Lin Fu
Song Fu
Koji Fukagata
Kai Fukami
Bharathram Ganapathisub-ramani
Ricardo Garcia-Mayoral
Bernard Geurts
Sina Ghaemi
Mark Glauser
Ari Glezer
Susumu Goto
Michael Graham
Fujihiro Hamba
Yosuke Hasegawa
Shuisheng He
R. Jason Hearst
Stefan Hickel
Jean-Pierre Hickey
Nicholas Hutchins
Jinyul Hwang
Yongyun Hwang
Kaoru Iwamoto
Ian Jacobi
Frank Jacobitz
Suad Jakirlic
Anya Jones
Christian Kaehler
Genta Kawahara
Kyung Chun Kim
Taehoon Kim
Hiromichi Kobayashi
Azeddine Kourta
Sylvain Laizet
Philippe Lavoie
Changhoon Lee
Inwon Lee
Jae Hwa Lee
Myoungkyu Lee
Sanjiva Lele
Chao-An Lin
Yingzheng Liu
Ellen Longmire
Mitul Luhar
Yvan Maciel
Hiroya Mamori
Robert Martinuzzi
Beverley McKeon
Charles Meneveau
Suresh Menon
Rajat Mittal
Yohei Morinishi
Jonathan Morrison
Godfrey Mungal
Ahmed Naguib
Hajime Nakamura
Jovan Nedić
Martin Oberlack
Ramis Örlü
George Papadakis
Yulia Peet
Jimmy Philip
Ugo Piomelli
Heinz Pitsch
Michael Plesniak
Maurizio Quadrio
Neil Sandham
Sutanu Sarkar
Theresa Saxton-Fox
Taraneh Sayadi
Philipp Schlatter
Anne-Marie Schreyer
Michael Schultz
Spencer Sherwin
Olga Shishkina
Carlos Bettencourt Silva
Alfredo Soldati
Julio Soria
Philippe Spalart
Konstantinos Steiros
Mikhail Strelets
Alexander Stroh
Kazuhiko Suga
Pierre Sullivan
Hyung Jin Sung
Kunihiko Taira
Shinji Tamano
Mamoru Tanahashi
Stavros Tavoularis
Dominique Thevenin
Flint Thomas
Federico Toschi
Yoshiyuki Tsuji
Tyler Van Buren
Christina Vanderwel
John Christos Vassilicos
Luc Vervisch
Ricardo Vinuesa
Marta Waclawczyk
Stefan Wallin
Bing-Chen Wang
Jinjun Wang
Meng Wang
Dea Daniella Wangsawijaya
Donald Webster
Jerry Westerweel
Kilian Vinzenz Wilhelm
Chunxiao Xu
Yue Yang
Serhiy Yarusevych

Useful Information

Registration: Heidelberg Congress Center, Level 0, West Entrance
Monday, 27 July 2026, 3:00pm – 8:00pm
Tuesday, 28 July 2026, 7:00am – 10:00am

Help Desk: Heidelberg Congress Center, Level 0, West Entrance
Tuesday – Friday, during the conference

Wi-Fi:
Internet will be provided for all symposium participants at the Heidelberg Congress Center. Users can log in using the following information:
Username: TSFP14
Password: Heidelberg2026

Welcome Reception: Heidelberg Congress Center, Level 0
Tuesday, 28 July 2026, 6:00pm – 8:00pm

Banquet Dinner: Heidelberg Castle
Wednesday, 29 July 2026, 7:00pm – 10:00pm
Venue: Heidelberg Castle, Schlosshof 1, 69117 Heidelberg
Bus transfer from Congress Center 6:00pm
Bus transfer back to Congress Center 10:00pm

Heidelberg Castle can be reached from the congress center in around 50 minutes by foot through the beautiful old town. A bus shuttle from the congress center will also be provided. The banquet will take place in the castle courtyard, weather permitting; otherwise, it will be held in the Königshalle (King's Hall).


Photo: Tobias Schwerdt/Heidelberg Marketing

Instructions

Speakers

1. Speakers should arrive early to their session and introduce themselves to the session chair.
2. Duration of oral presentations: 20 minutes in total, including 2 minutes for Q&A and 1 minute for the changeover. There will be a timing system that clearly displays the time limits for speakers and audience members.
3. Invited lectures sessions: 50 minutes in total, including 10 minutes for Q&A, and then 10 minutes for changeover to the session tracks.
4. To ensure that the parallel sessions are coordinated, speakers must complete their talks within the allotted time. Timing equipment is provided to aid this process.
5. All presenters must use their own laptop computers to make their oral presentations. The video connection will be a full-size HDMI connection. An HDMI-to-USB-C adapter will also be provided in each room. Participants whose computers use video ports other than HDMI and USB-C are responsible for bringing their own adapters.
6. Due to the short period of changeover, please ensure:
   - Speakers arrive before the session starts, to test their presentation with the equipment in their designated room. Support will be available in the presentation room.
   - Please ensure that animations and equations in the presentation are displayed correctly. As noted above, presentations can be tested in the session rooms during coffee & lunch breaks.

Session Chairs

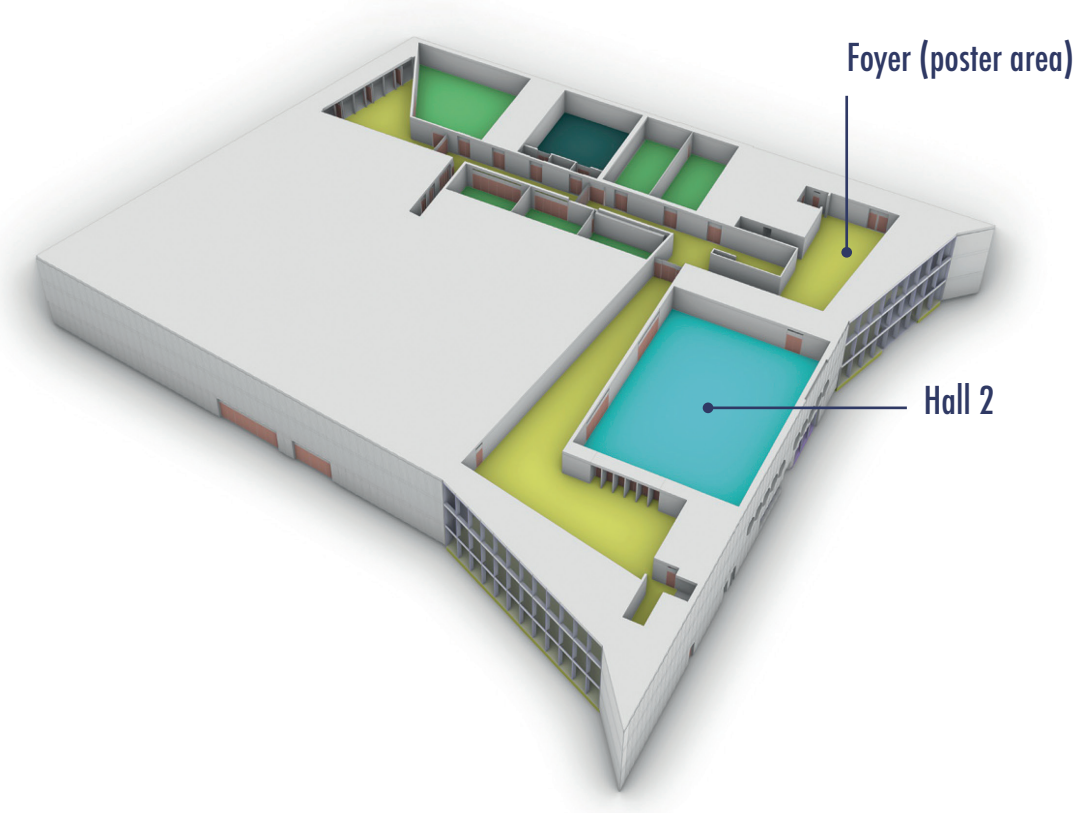
1. Chairs should arrive early to their respective sessions, locate the speakers and explain the timing.
2. Chairs are responsible for introducing the speakers, administering the question and answer period after each talk, and ensuring that the session proceeds on time.
3. If a speaker fails to appear or if a presentation has been withdrawn, the chair should suspend the session until the next scheduled presentation
4. A laser pointer will be available in each room at the start of the session and should be left at the Speaker Table at the front of the room at the end of each session.
5. There will be support in each of the presentation rooms to assist you.

Poster Instructions

Poster Interact Presentations

1. Posters can be mounted from 5:00pm on Monday, 27 July and need to be on display from 5:00pm Tuesday, 28 July until Friday morning, 31 July.
2. The poster display area is in the foyer on Level 1; poster boards will be in place for mounting upon arrival.
3. Posters should be removed at the latest by 11:30am on Friday, 31 July.
4. The poster board measures 146 cm high by 118 cm wide (57 in by 46 in). Either landscape or portrait orientation is acceptable.
5. A very sturdy tablet holder is mounted on the side of the poster board, which can accommodate tablets up to 29 cm by 23 cm (11.5 in by 9 in).
6. Tracks/Velcro strips for mounting the posters will be provided.
7. Poster boards are numbered; these can be selected from the list on pages 28–31.

Level 1



Plenary Sessions (Hall 2)

Kasagi Lecture, Tuesday, 28 July 2026, 9:00am – 9:50am
R. Jason Hearst (Norwegian University of Science and Technology)
Changing the boundary conditions: From walls to air-water interfaces

Humphrey Lecture, Tuesday, 28 July 2026, 1:30pm – 2:30pm
Megan Leftwich (The George Washington University, USA)
An investigation into the static performance of the California sea lion foreflipper

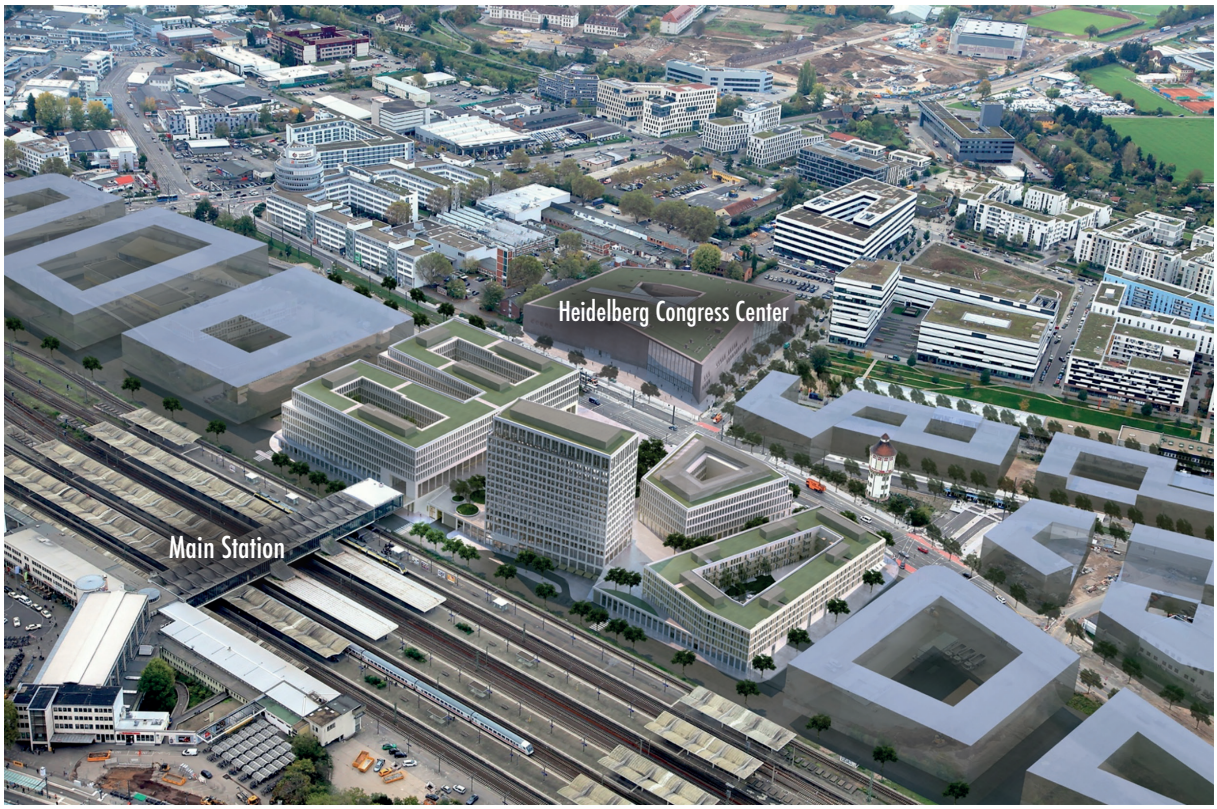
Invited Lecture, Wednesday, 29 July 2026, 8:30am – 9:20am
Bérengère Dubrulle (CNRS, France)
Singularities and physics of turbulent shear flows

Invited Lecture, Wednesday, 29 July 2026, 1:30pm – 2:20pm
Rama Govindarajan (Tata Institute of Fundamental Research, India)
The role of analytical approaches in understanding particle-laden flows

Invited Lecture, Thursday, 30 July 2026, 9:00am – 9:50am
Carlos Pantano (University of Southern California, USA)
Aerodynamic challenges in the fluid-structure interaction simulation of parachute deployment

Invited Lecture, Thursday, 30 July 2026, 1:30pm – 2:20pm
Florian Menter (Ansys Germany GmbH, Germany)
Turbulence modelling in the age of GPU power

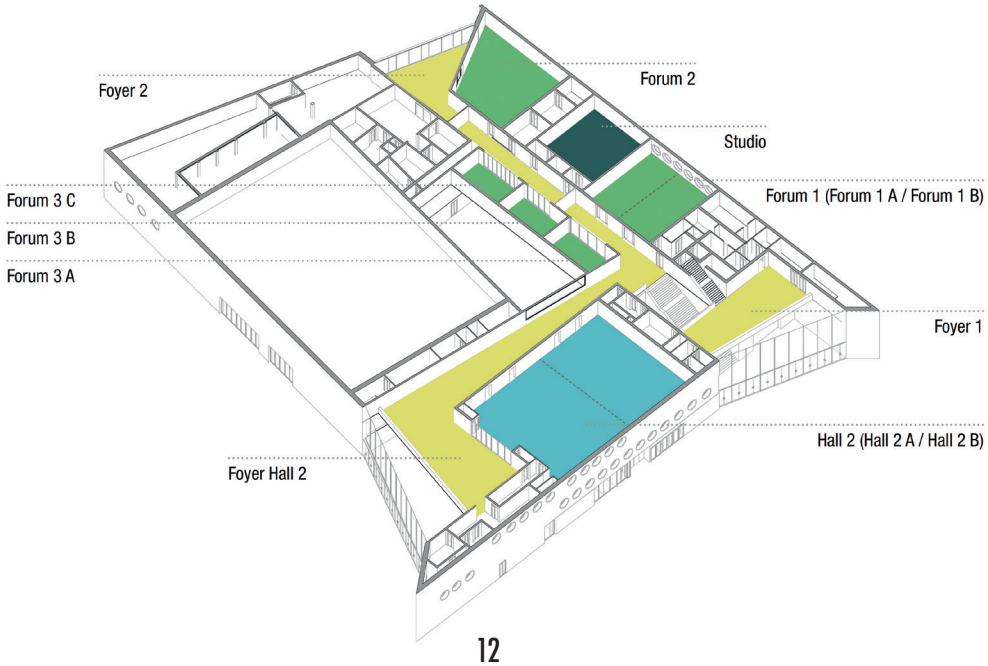
The Venue



The Heidelberg Congress Center (HCC) is located in Heidelberg's Bahnstadt district that offers optimum design and development opportunities and is very well connected in terms of transportation. The building will be just a few minutes' walk from the main train station. The streetcar stop "Hauptbahnhof Süd" (main train station south) is located directly in front of the HCC.

All TSFP lectures and sessions will be held on Level 1. Plenary lectures will take place in Hall 2 with an area of 645 m². The parallel sessions are in Hall 2, Forum 1A, Forum 1B, Forum 2, Forum 3A, and Forum 3B. At the very top of the Heidelberg Congress Center is the Rooftop Space with a seating grandstand. The HCC Coffee Bar can be found on Level 0.

Level 1



TSFP14

14th International Symposium on
Turbulence and
Shear Flow Phenomena

28–31 July 2026, Heidelberg, Germany

SCIENTIFIC PROGRAM

Monday, 27 July: Registration 3:00pm – 8:00pm

Tuesday, 28 July: Registration 7:00am – 10:00am

	8:30am	Opening Ceremony				
Session 1, 9:00am		Kasagi Award Lecture (Invited 1) Location: Hall 2 Chair: Bharathram Ganapathisubramani, University of Southampton, United Kingdom Changing the boundary conditions: From walls to air-water interfaces R. Jason Hearst				
Session 2		2A: TurbBL&WallBTurb 1 Location: Hall 2 Chair: Julio Soria, Monash University, Australia	2B: JW&SepFl 1 Location: Forum 1A Chair: Sutanu Sarkar, UCSD, United States of America	2C: CohStruct 1 Location: Forum 1B Chair: Bettina Frohnapfel, Karlsruhe Institute of Technology, Germany	2D: TurbTheory 1 Location: Forum 2 Chair: Beverley McKeon, Stanford University, United States of America	2E: TurbModel 1 Location: Forum 3A&B Chair: Haecheon Choi, Seoul National University, South Korea
1	10:00am	A non-dimensional parameter characterizing the relaminarization of turbulent boundary layers at supersonic expansion corners Soju Maejima, Soshi Kawai	Velocity Field of a Genetic Algorithm-Based Actively Controlled Three-Dimensional Turbulent Wall Jet Zachary Titus, Joseph Hall	Spatio-temporal features of heat- and momentum-transfer in impinging jets using LSE-HPOD Marco Raiola, Francesco Secchi, Davide Gatti, Jochen Kriegseis, Bettina Frohnapfel	Direct estimation of multifractal dimension of turbulence at high Reynolds numbers Susumu Goto, Daiki Watanabe, Tsuyoshi Yoneda	Assessment of a new class of turbulence closures for very-coarse numerical simulations Andrea Cimarelli, Yves Tessier Urrecha, Bojan Niceno
2	10:20am	Supersonic turbulent boundary layer on a plate. Asymptotic structure and similarity laws Igor Vigdorovich	Heat transfer efficiency in turbulent jet impingement Francesco Secchi, Davide Gatti, Bettina Frohnapfel	Reduced-Order Model for Flow Dynamics and Inter-scale Energy Transfer in the Thin Flat Plate Wake Xinyang Liu, Robert Martinuzzi, Chris Morton, Wenyuan Liao	Homogeneous shear turbulence: Kinetic energy growth rate as a nonlinear eigenvalue problem Jakob Albert, Martin Oberlack	A criterion for determining the need for scale-resolving simulation and dynamic interface placement in hybrid URANS-LES modeling Amirfarhang Mehdizadeh
3	10:40am	Contribution from linear amplification to drag reduction from riblets Stephen Terrington, Christopher Camobreco, Mitul Luhar, Nicholas Hutchins, Daniel Chung	Experimental analysis on three-dimensional turbulent structures of bubbly flow generated by a turbulent plunging jet Jinho Oh, Kyung Chun Kim	Uncovering turbulent dynamics in stenotic flows from 4D-flow MRI measurements via resolvent analysis and data assimilation Alexandre Villié, Hannes Dillinger, Sebastian Schmitter, Simon Demange, Kilian Oberleithner	High-order moment scaling of near-wall turbulence for arbitrary velocities: An extended symmetry approach Martin Oberlack, Simon Görtz, Sergio Hoyas	An embedded LES method for turbulent flows Jannik Borgelt, Matthias Meinke, Dominik Krug, Wolfgang Schröder
	11:00am – 11:20am	Coffee Break				

Session 3		3A: TurbBL&WallBTurb 2 Location: Hall 2 Chair: Nicholas Hutchins, University of Melbourne, Australia	3B: JW&SepFl 2 Location: Forum 1A Chair: Jacques Borée, ISAE ENSMA, France	3C: LES&DNS 1 Location: Forum 1B Chair: Charles Meneveau, Johns Hopkins University, United States of America	3D: Instab&Trans 1 Location: Forum 2 Chair: Sourabh S. Diwan, Indian Institute of Science, India	3E: HomTurb 1 Location: Forum 3A&B Chair: Carlos Bettencourt Silva, Instituto Superior Técnico/University of Lisbon, Portugal
1	11:20am	Pressure Gradient Parameter for Outer Layer Similarity in Nonequilibrium Adverse Pressure Gradient Boundary Layers Ralph Volino, Michael Schultz	The drag force on a decelerating round plate Nicola Savelli, Ali Khojasteh, Jerry Westerweel	Transient response of magnetohydrodynamic turbulence in incompressible channel flow to sudden application and removal of magnetic field Kia Makouei, Myoungkyu Lee	Spectral Entropy as a marker for the laminar-turbulent transition. An experimental used-case with high-speed PIV measurements in a helically coiled reactor. Conrad Müller, Péter Kováts, Katharina Zähringer	Scale-Dependent Analysis of Curvature and Torsion Statistics in Homogeneous Turbulent Shear Flow Frank Jacobitz, Kai Schneider
2	11:40am	Effects of streamwise variation in pressure gradient on turbulent boundary layers Ashley Lynn Kwong, Dea Daniella Wangsawijaya, Bharath Ganapathisubramani	Evolution of rapid, shear-generated gusts Ingrid Neunaber, Martin Obligado, Caroline Braud	Isotropy and homogeneity of the Taylor-Green-vortex Markus Klein, Artur Tyliszczak, Josef Hasslberger, Massimo Germano	Multistability and pattern formation in turbulent magnetoconvection Asif Nawaz, Andrei Teimurazov, Matthew McCormack, Olga Shishkina, Moritz Linkmann	Numerical Simulations of Inertial Particle Clustering in Non-Equilibrium Turbulent Flows Taketo Tominaga, Ryo Onishi
3	12:00pm	Direct numerical simulations of the rod-roughened turbulent boundary layer under pressure gradient Yi Li, Wei-Xi Huang, Chun-Xiao Xu	Lie-symmetry based scaling laws and non-equilibrium dissipation scaling in turbulent plane jets Nils Benedikt, Paul Braun, Martin Oberlack	DNS and Experiments on Thermal Convection in Storage Tubes of Hypersonic Ludwieg Facilities Jean-Marc Heinricy, Léon Lüer, Wolfgang Schröder, Rolf Radespiel, Dominik Krug, David Rival	Transition to turbulence in an incompressible flow past a multi-element airfoil: Görtler vortices Ming Teng, Catherine Mavriplis	Direct Lagrangian simulation of droplet growth in a vertically developing turbulent cloud Masaya Iwashima, Ryo Onishi
4	12:20pm	Analysis of the nonlinear forcing in the bi-global resolvent formulation for a self-similar adverse pressure gradient turbulent boundary layer at the verge of separation Bihai Sun, Kevin Liu, Antonio Matas, Callum Atkinson, Julio Soria	Sparse-sensor instantaneous flow reconstruction around a thick airfoil near stall under different turbulent inflow conditions Quentin Bucquet, Bérengère Podvin, Caroline Braud, Emmanuel Guilmineau, Salvatore Iavarone	Towards PR-DNS of scour around a wall-mounted cylinder in turbulent open channel flow Leo Bürk, Artjom Hermann, Markus Weyrauch, Markus Uhlmann	Laminar flow, stability and transition in helical pipes Riccardo Casali, Isa Mammadli, Valerio Lupi, Philipp Schlatter	Timescale-based understanding turbulence modulation by polymer additives Hayato Masuda, Yutaro Motoori, Susumu Goto
12:40pm – 1:30pm		Lunch				

Session 4, 1:30pm		Humphrey Lecture (Invited 2) Location: Hall 2 Chair: Stavros Tavoularis, University of Ottawa, Canada An investigation into the static performance of the California sea lion foreflipper Megan Leftwich, Ian Moss, Aditya Kulkarni, Kartik Bulusu, Frank Fish				
Session 5		5A: TurbBL&WallBTurb 3 Location: Hall 2 Chair: Christina Vanderwel, University of Southampton, United Kingdom	5B: CohStruct 2 Location: Forum 1A Chair: Inwon Lee, Pusan National University, South Korea	5C: BioFluids Location: Forum 1B Chair: Taehoon Kim, Seoul National University of Science and Technology, South Korea	5D: ML&DataDModel 1 Location: Forum 2 Chair: Kunihiko Taira, UCLA, United States of America	5E: Aerodyn&Acous 1 Location: Forum 3A&B Chair: Michael Plesniak, George Washington University, United States of America
1	2:40pm	Influence of d-Type Roughness on A Self-Similar Adverse Pressure Gradient Turbulent Boundary Layer Ziqi Chen, Bihai Sun, Alireza Heidarian, Callum Atkinson, Julio Soria	Transition between localised and space-filling states of purely elastic turbulence in channel flows Damiano Capocci, Moritz Linkmann, Alexander Morozov	Active turbulence simulation of methanotrophs Jongmin Seo, Kyungyoun Han, Young-Su Ko, Choongyeop Lee	Data-driven forcing-informed resolvent analysis Yuta Iwatani, Kunihiko Taira, Soshi Kawai	Decoupling Reynolds number and reduced velocity effects in characterization of flow induced vibration of rectangular cylinders Ross Cruikshank, David Olson, Ahmed Naguib
2	3:00pm	On the wake region of high-Reynolds-number turbulent boundary layers subject to adverse pressure gradients Mitchell Lozier, Ahmad Zarei, Ivan Marusic, Rahul Deshpande	Frequency-dependent spectral structures in active grid turbulence Nathaniel Durand, Hossein Motalebi, Clayton Byers, Kelly Huang	Vortex Dynamics from Burst-and-Coast Motion of an Anguilliform Swimmer Zahra Maleksabet, Maham Kamran, Ali Tarokh, Muhammad Saif Ullah Khalid	Progressive Mixture-of-Experts with Autoencoder Routing for Continual RANS Turbulence Modelling Haoyu Ji, Yinhang Luo, Hanyu Zhou, Yaomin Zhao	Bubble interaction dynamics and acoustic signature due to coalescence, impingement, and fragmentation Suraj Narayan Dhar, Narsing K Jha
3	3:20pm	DNS and modeling of an oscillating turbulent boundary layer Hiroyuki Abe, Philippe R. Spalart	Extreme temperature and heat flux events in a weakly turbulent flow Xue Chen, Jiahui Han, Minping Wan	Direct Numerical Simulation of Secondary Currents in Arterial Flows with Stents Jonathan Neuhauser, Niklas Langer, Andrea Zampiron, Alexander Stroh	Discriminator-based Inner Layer Forcing Model for Wall Bounded Flows over Rough Walls Ming Liu, Simon Dalpke, Alexander Stroh, Yosuke Hasegawa	Reflection of acoustic waves and causality in free shear layers Simon Görtz, Lara De Broeck, Paul Hollmann, Martin Oberlack
4	3:40pm	Altering near-Wall Turbulence via Helmholtz Resonators with Inclined Orifices in Wall-Bounded Flows Abdelrahman hisham ahmed sabri Hassanein, Woutijn J. Baars, Davide Modesti	Outer-layer similarity and inner-outer interactions in pipes with regular sinusoidal rough walls Siavash Toosi, Daniele Massaro, Philipp Schlatter	A new 3D-printed arterial flow facility Andrea Zampiron, Elena Zarantonello, Andrea Marzellotta, Stefano Lanzoni, Francesca Maria Susin	Data-driven control of very large scale motions in a turbulent boundary layer Mansimran Singh, Sina Ghaemi	Wake-induced transition in separated boundary layers Maziyar Hassanpour, Robert Martinuzzi, Ugo Piomelli
4:00pm – 4:30pm		Coffee Break				

Session 6		6A: TurbBL&WallBTurb 4 Location: Hall 2 Chair: Myoungkyu Lee, University of Houston, United States of America	6B: JW&SepFl 3 Location: Forum 1A Chair: Philippe Lavoie, University of Toronto, Canada	6C: CohStruct 3 Location: Forum 1B Chair: Robert Martinuzzi, University of Calgary, Canada	6D: LES&DNS 2 Location: Forum 2 Chair: Jochen Fröhlich, TU Dresden, Germany	6E: DragRed&FlContr 1 Location: Forum 3A&B Chair: Hiroya Mamori, The University of Electro-Communications, Japan
1	4:30pm	Measurements of non-linear energy transfer in canonical and drag-reduced turbulent boundary layers Max Knoop, Bas van Oudheusden, Rahul Deshpande	Energy transfer analysis for large-scale unsteadiness of cylinder wake based on triadic orthogonal decomposition Yuto Nakamura, Shintaro Sato, Naofumi Ohnishi	Lagrangian particle motions in superfluid helium and their interaction with quantum vortices Pasan Sanjeeva Karuna Pathirannehelage, Yoshiyuki Tsuji	Finding symbolic subgrid scale closures by combining machine learning and multiscale filtering Josef Hasslberger, Maximilian Reissmann, Richard Sandberg, Markus Klein	Multi-task Gaussian process regression for active drag reduction in turbulent boundary layer flows Fabian Hübenthal, Matthias Meinke, Wolfgang Schröder, Dominik Krug
2	4:50pm	Assessment and improvement of predictive models for estimating ship drag penalties from calcareous biofouling roughness Isnain 'Aliman, Jelle Will, Bagus Nugroho, Jason Monty, Nicholas Hutchins	Velocity correlation scales in the wake of a wind turbine Lorenn Sandra Léann Le Turnier, Hyunseok Kim, Jan Moláček, Christian Küchler, Eberhard Bodenchatz, Claudia E. Brunner	Effects of microstructures on the spatiotemporal characteristics of turbulent flow separation around rectangular prism Fati Bio Abdul-Salam, Mark Francis Tachie	Numerical Simulation of Flow in Karst Conduits Ismail El Mellas, Alexander Stroh, Juan J. Hidalgo, Marco Dentz	Mitigating flashback risk with automatic boundary condition and mesh-deforming shape optimization Kai Hildebrandt, Alexander Jaeschke, Olivier Marquet, Kilian Oberleithner
3	5:10pm	Scale-by-scale non-equilibrium driven by non-homogeneity in the central region of turbulent channel flow Jiamei Li, Christos Vassilicos	Dissipation scaling in wind turbine wakes exposed to freestream turbulence Oliver Buxton, Martin Bourhis	Effects of freestream turbulence intensity on the spatio-temporal characteristics of flow separation around rectangular prism Fati Bio Abdul-Salam, Mark Francis Tachie	On the k-roughness regime of streamwise-aligned structured surfaces Stefano Cipelli, Bettina Frohnapfel, Davide Gatti	Integrated optimization of passive and active controls for drag reduction of an axisymmetric body Wenlong ZHAO, Guoming Deng, Yu Zhou
6:00pm – 8:00pm		Welcome Reception (HCC Level 0)				

Wednesday, 29 July

Session 7, 8:30am		Invited Lecture 3 Location: Hall 2 Chair: Martin Oberlack, Technical University of Darmstadt, Germany Singularities and Physics of Turbulent Shear flows Bérengère Dubrulle, Lucas Fery, Adrien Lopez, Wandrille Ruffenach				
Session 8		8A: TurbBL&WallBTurb 5 Location: Hall 2 Chair: Ian Jacobi, Technion, Israel	8B: JW&SepFl 4 Location: Forum 1A Chair: Anne-Marie Schreyer, Hochschule München, Germany	8C: LES&DNS 3 Location: Forum 1B Chair: Philipp Schlatter, FAU Erlangen-Nürnberg, Germany	8D: MultPhaseFl 1 Location: Forum 2 Chair: Susumu Goto, The University of Osaka, Japan	8E: TurbTheory 2 Location: Forum 3A&B Chair: Mark Glauser, Syracuse University, United States of America
1	9:30am	Measurements of the unsteady wall shear stress vector in the turbulent pipe flow up to Re_τ = 28 000 Joachim Klinner, Chris Willert, Lorenzo Magnani, Alessandro Talamelli, Gabriele Bellani	Geometry-Induced Flow Separation over Surface-Mounted Trapezoidal Protrusions Shahar Zuckerman, Jibu Tom Jose, Omri Ram	Reconstructing turbulent channel flow fields with a machine-learned prior distribution Frederik Aerts, Dirk Nuyens, Johan Meyers	Influence of the free-stream turbulence on the onset of wave formation Romain Mathis, Sébastien Cazin, Jeanne Methel, François Charru, Jacques Magnaudet, Frédéric Moisy, Marc Rabaud	Scale-by-scale turbulent energy transfers in very steeply non-homogeneous turbulence without mean-flow gradients Martin Jose, Alexandros Alexakis, Christos Vassilicos
2	9:50am	Contribution of large-scale structures to wall shear stress in drag-reduced polymer turbulence Jumpei Asaoka, Yuta Yamamoto, Yu Wang, Yoshiyuki Tsuji	Separated flow physics using frequency analysis and modal decomposition Anushka Subedi, Tulio Ricciardi, Yulia Peet	Scale-dependent convection velocities of passive scalar structures in wall-bounded turbulence Christian Dederichs, Davide Gatti, Jonathan Neuhauser	A Continuum Framework for Dense Suspensions For The Simulation of Active Turbulence Houssem Ben Gozlen, Yongqi Wang, Martin Oberlack	A model for small-scale interaction in merging turbulent regions Francisco A. Branco, Andrea Cimarelli, Carlos B. da Silva
3	10:10am	Subconvective wall-shear fluctuations in high-Reynolds number boundary layers Tomek Jaroslawski, Jonathan Massey, Facundo Cabrera-Booman, Kyle Devlin, Alexander Smits, Beverley McKeon	Low frequency dynamics of the bi-stable wake for a three-dimensional hill Daniel MacGregor, Philippe Lavoie	Direct numerical simulation of high-speed three-dimensional leading edge boundary layer Youcheng Xi, Song Fu	Heavy Kolmogorov-size spherical particles in homogeneous isotropic turbulence Ludovico Fossa, Marco Edoardo Rosti	Estimating turbulence intensity and integral scale in the near region of turbulence grids Leah-Kathleen Lavoie, Jovan Nedić
4	10:30am	On the impact of superstructures on the instantaneous wall-shear stress in rough-wall boundary layers Ioannis K. Kaminaris, Elias Balaras, Michael P. Schultz	Effects of Confinement on Unsteady Turbulent Separated Flow over a Gaussian Bump Adam Steacy, Kevin H. Manohar, Robert J. Martinuzzi, Owen J. Williams, Chris Morton	Direct Numerical Simulation of Spatially Developing Channel Magneto-convection Alex Old, Wei Wang, Shuisheng He	Flow structures in hindered settling of heavy particles Simone Tandurella, Alessandro Chiarini, Marco Edoardo Rosti	Non-equilibrium scalings and structures in the spheroid turbulent wake Clément Barbet-Lavergne, Pierre Bragança, Christophe Cuvier, Sutanu Sarkar, John Christos Vassilicos
10:50am – 11:10am		Coffee Break				

Session 9		9A: TurbBL&WallBTurb 6 Location: Hall 2 Chair: Sourabh Apte, Oregon State University, United States of America	9B: CohStruct 4 Location: Forum 1A Chair: Ebenezer Ekow Essel, Concordia University, Canada	9C: Instab&Trans 2 Location: Forum 1B Chair: Jerry Westerweel, Technische Universiteit Delft, Netherlands	9D: DragRed&FlContr 2 Location: Forum 2 Chair: Shinji Tamano, Nagoya Institute of Technology, Japan	9E: MultPhaseFl 2 Location: Forum 3A&B Chair: Markus Uhlmann, Karlsruhe Institute of Technology, Germany
1	11:10am	Effects of wall-shear stress fluctuations on grid convergence of wall-modeled large-eddy simulation Hirotaka Maeyama, Haruki Itsui, Soshi Kawai	Data-Driven Upsampling Reveals Amplitude Modulation in the Turbulent Separated Wake of a 3D Gaussian Bump Kevin H. Manohar, Chris Morton, Robert J. Martinuzzi, Owen Williams	Oblique modes & spatio-temporal linear instability of plane Couette flow Kilian Vinzenz Wilhelm, Nrupa Chandra, Johannes Conrad, Simon Görtz, Martin Oberlack, Yongqi Wang	Drag reduction through reduced vortex stretching in shear flow Tong Wu, Wouter Bos, Xuan Shao, Le Fang	Lagrangian relative motion of particle-bubble pairs in three-phase flows Tian Ma, Hendrik Hessenkemper, Guangyuan Huang, Andrew Bragg
2	11:30am	Universality of probability density function of velocity fluctuation in high-Reynolds number wall-bounded shear flow Yoshiyuki Tsuji, Yoshinobu Yamamoto, Marie Ono, Furuichi Noriyuki	A data-driven SGS model that preserves information based on the local equilibrium hypothesis Takeru Hashimoto, Takahiro Tsukahara, Ryo Araki	Stability analysis for finite-magnitude disturbances Ofek Frank-Shapir, Igal Gluzman	Reduction of pressure fluctuations in incompressible cavity flows by multiple slot jets Seungho Yoo, Jae Hwa Lee	Turbulent flow of a channel bounded by a sinusoidal hyper-elastic wall M. S. Aswathy, Morie Koseki, Marco Edoardo Rosti
3	11:50am	Reynolds stress transport as resolved by instantaneous wall-normal integrals Tanner Ragan, Perry Johnson	Spectral proper orthogonal decomposition of the flow around two surface-mounted cubes in tandem Barbara L. da Silva, David Sumner, Donald J. Bergstrom	Bridging Lyapunov and Global Linear stability analyses Sidhartha Sahu, George Papadakis	Active control on lateral aerodynamic forces of a full-scale high-speed train under crosswind by steady blowing at the head Guoming Deng, Wenlong Zhao, Zhengwei Ma, Yu Zhou, Xiongshi Wang	Turbulent Channel Flow with Cohesive Particles Alexandre Leonelli, Eckart Meiburg
4	12:10pm	Turbulence control of aeronautical flows with plasma-induced jets Jacopo SERPIERI, Edoardo FRACCHIA, Gioacchino CAFIERO, Lorenzo MAGNANI, Alessandro TALAMELLI, Gabriele BELLANI, Christian WILLERT	Correlation of energy extraction efficiency of an autorotating flat plate with near-wake vortical structures Bhramar Pustode, Narsing Kumar Jha, Amitabh Bhattacharya	Transition mechanisms in laminar boundary layers over surface gaps Víctor Ballester Ribó, Jeffrey Crouch, Yongyun Hwang, Spencer Sherwin	Passive control of the separation induced by convex geometry at high Reynolds number Artur Dróżdż, Mathias Romańczyk, Witold Elsner	Experimental Investigation of Bubble-Induced Turbulence Modulation via Planar Particle Tracking Augusto H. P. Zanca, Yutaro Motoori, Susumu Goto
12:30pm – 1:30pm		Lunch				

Session 10	1:30pm	Invited Lecture 4 Location: Hall 2 Chair: Bettina Frohnapfel, Karlsruhe Institute of Technology, Germany The role of analytical approaches in understanding particle-laden flows Rama Govindarajan, Anup Kumar, Saumav Kapoor				
Session 11		11A: TurbBL&WallBTurb 7 Location: Hall 2 Chair: Bing-Chen Wang, Univ. of Manitoba, Canada	11B: CohStruct 5 Location: Forum 1A Chair: Scott Dawson, Illinois Institute of Technology, United States of America	11C: LES&DNS 4 Location: Forum 1B Chair: Hiroyuki Abe, Japan Aerospace Exploration Agency, Japan	11D: Rough&PorWall 1 Location: Forum 2 Chair: Bharathram Ganapathisubramani, University of Southampton, United Kingdom	11E: ML&DataDModel 2 Location: Forum 3A&B Chair: Yulia Peet, Arizona State University, United States of America
1	2:30pm	A broad downstream-region PIV measurement and mode analysis of Couette and Poiseuille flows over a forward facing step Toru Yamada, Ryuichi Tanaka, Yusuke Okochi, Yohei Morinishi	Linear and Nonlinear Sources of Sub-convective Pressure Fluctuations using Kraichnan's Approach Bhavika Sharma, Shishir Damani, Gerrit Vander Wiel, Eric Totten, William Devenport, Todd Lowe	Restricted nonlinear boundary layer transition Benjamin Minnick, Alexandra Risha, Dennice Gayme	Decoupling the effects of permeability and roughness Dea Daniella Wangsawijaya, Prateek Jaiswal, Bharathram Ganapathisubramani	Extending the dynamical systems view of turbulence to large domains Dmitriy Zhigunov, Rich R Kerswell, Jacob Page
2	2:50pm	Is there a new Log-Law in Stratified Channel Flows? Vincent Joel Peterhans, Victor Avsarkisov, Juan Pedro Mellado, Sergio Hoyas	Energy cascade based on coherent vortices in turbulence Keisuke Endo, Yutaro Motoori, Susumu Goto	Relaminarization of a turbulent flow entering a rotating annular duct Thomas Hultsch, Jörg Stiller, Jochen Fröhlich	Behaviour of secondary currents in the limit of vanishing ridge height Oleksandr Zhdanov, Angela Busse	Towards a Unified Turbulence Model through Multi-Objective Learning Zhuo-Ran Liu, Hao-Chen Wang, Zhuo-Lin Zhao, Heng Xiao
3	3:10pm	Effect of Boundary Layer Development on Flow Separation Over the BeVERLI Hill Nicole-Marie Sa'adeh, Daniel MacGregor, Philippe Lavoie	Data-driven transient modal analysis for extreme vortex-gust airfoil interactions with time-dependent bases Shaghayegh Zamani Ashtiani, Kai Fukami	Direct numerical simulation of the rotating disk turbulent boundary layer Nicholas Morse, Niclas Jansson, Mathis Bode, R.J. Lingwood, P. Henrik Alfredsson, Mihai Mihaescu, Ramis Örlü, Philipp Schlatter	Surface Roughness and Intake Flow Effects on Film Formation and Evaporation in Methanol Port Fuel Injection for Marine Engines Jannick Erhard, Irem Alp, Sandra Schary, Andreas Dreizler, Benjamin Böhm	Multi-fidelity data-driven turbulence modeling, Reynolds number extrapolation, and a log(Re) solution to the turbulence problem Jiaqi Li, George Huang, Robert Kunz, Xiang Yang
4	3:30pm	Turbulent puff relaminarization in pipe flow, saddle-node bifurcation and Airy equation Alex Yakhot, Basheer A. Khan, Shai Arogeti, Oriel Shoshani	Computing SPOD from Frequency Bands of the Full-Length Discrete Fourier Transform Jakob G. R. von Saldern, Oliver T. Schmidt, Philipp Godbersen, J. Moritz Reumschüssel, Tim Colonius	Simulation of turbulent mixing using deconvolved discretization Bernard Geurts, Lena Caban, Steffen Stolz, Andrzej Bogusławski, Artur Tyliszczak	Effect of Heterogeneous Roughness Patch Arrangement in Turbulent Channel Flow Simon Dalpke, Carola Schmidt, Andreas Nettekoven, Alexander Stroh, Bettina Frohnapfel	Bayesian optimization with Gaussian process regression using observation-dependent uncertainties for reducing flow induced transverse loads on multi-step cylinders Cai Tian, Saleh Rezaeiravesh, Philipp Schlatter
3:50pm – 4:20pm		Coffee Break				

Session 12		12A: TurbBL&WallBTurb 8 Location: Hall 2 Chair: Yoshiyuki Tsuji, Nagoya University, Japan	12B: JW&SepFl 5 Location: Forum 1A Chair: Karen Mulleners, EPFL, Switzerland	12C: CohStruct 6 Location: Forum 1B Chair: Sina Ghaemi, University of Alberta, Canada	12D: LES&DNS 5 Location: Forum 2 Chair: Ramis Örlü, OsloMet – Oslo Metropolitan University, Norway	12E: TurbTheory 3 Location: Forum 3A&B Chair: Jovan Nedić, McGill University, Canada
1	4:20pm	Data-driven quasi-linear modelling of compressible turbulent channel flows using incompressible data Zecheng Zou, Alessandro Ceci, Sergio Pirozzoli, Yongyun Hwang	LES of jet from truncated ideally contoured nozzles in overexpanded conditions Ilyan PINGAULT, Romain GOJON, Stéphane JAMME, Jérémie GRESSIER, Vincent JAUNET, Guillaume LEHNASCH	Linear modeling of low-frequency dynamics in separated turbulent flow over a smooth bump Roman Klopsch, Lukas M. Fuchs, Georgios Rigas, Kilian Oberleithner, Jakob G. R. von Saldern	Spectral Analysis of Turbulent Transport of Reynolds Stresses in Elliptical Pipe Flows Taylor C. Opperman, Bing-Chen Wang	Statistical modeling of third-order structure function in woven turbulence with Lundgren spiral vortices Zhi Zheng, Yue Yang
2	4:40pm	Two-point energy and enstrophy budgets in turbulent boundary layers Gabriele Boga, Andrea Cimarelli	On Reynolds number effects in a slender-body wake Sanidhya Jain, Sutanu Sarkar	Least-squares reconstruction of pressure from perpendicular intersecting PIV fields in a turbulent separation bubble Matthew Harker, Giuseppe Di Labbio, Louis Dufresne, Arnaud Le Floc'h, Nan Hu, Michaela Herr, Jérôme Vétel	Numerical simulation of the interaction of a shock wave with a turbulent shear layer using high order spectral difference methods Matthias Frey, Andrea Sanchez, Marc Montagnac, Romain Gojon, Jérémie Gressier, Stéphane Jamme	A Functional Renormalization Group Approach for Elastic Burgers Turbulence Johannes Conrad
3	5:00pm	An exact analytical framework for spatiotemporal modal analysis of a turbulent channel Miya Coimbra, Beverley McKeon	The -5/3 scaling for energy spectra in a circular cylinder wake C. Huang, L. Danaila, R. A. Antonia, T. M. Zhou, S.L. Tang	Analysis of the flow over Checkerboard Heterogenous Roughness using Particle Tracking Velocimetry and Hot Wire Anemometry Tomos Rich, Patricia Sujar-Garrido, Carola Schmidt, Jonathan Neuhauser, Jochen Kriegseis, Bettina Frohnapfel	Large Eddy Simulation Conceptualized as a Synthesis of Filtering, Modeling and Discretization Roel Verstappen	Expressing turbulent energy as gradient invariants in (magneto)hydrodynamics and beyond. Damiano Capocci
	6:00pm	Bus transfer for Banquet Dinner				
7:00pm – 10:00pm		Banquet Dinner at Heidelberg Castle				

Thursday, 30 July

Session 13	9:00am	Invited Lecture 5 Location: Hall 2 Chair: Beverley Mc Keon, Standford University, United States of America Aerodynamic Challenges in the Fluid-Structure Interaction Simulation of Parachute Deployment Carlos Pantano				
Session 14		14A: TurbBL&WallBTurb 9 Location: Hall 2 Chair: Geert Brethouwer, KTH, Sweden	14B: JW&SepFl 6 Location: Forum 1A Chair: Donald Bergstrom, University of Saskatchewan, Canada	14C: Instab&Trans 3 Location: Forum 1B Chair: Jimmy Philip, The University of Melbourne, Australia	14D: MultPhaseFl 3 Location: Forum 2 Chair: R. Jason Hearst, Norwegian University of Science & Technology, Norway	14E: Rough&PorWall 2 Location: Forum 3A&B Chair: Yosuke Hasegawa, The University of Tokyo, Japan
1	10:00am	A validated tool to predict drag penalty due to hull roughness directly from hull-scan data Jelle Will, Isnain 'Aliman, Bagus Nugroho, Hendriyadi -, Trisnadi Mulia, Fadlilatul Taufany, I Ketut Suastika, I Ketut Aria Pria Utama, Mike Schultz, Jason Monty, Nicholas Hutchins	Influence of yaw misalignment direction and coriolis force on the wake characteristics of a wind turbine Utkarsh Deep Tiwari, Niranjan S Ghaisas, Kishalay Mitra	Energy production and dissipation within turbulent spikes and spots in a bypass-transitional boundary layer Yash Naiwar, Sourabh S. Diwan	Collision dynamics and agglomeration of ellipsoidal particles in shear flow using the immersed boundary method Connor Nolan, Jacob Anderson, Lee Mortimer, Peter Jimack, Michael Fairweather	Direct numerical simulation of forced air convection in rough channels with variable physical properties Alessandro Ceci, Davide Modesti
2	10:20am	Heat transfer and dynamics of secondary motions over streamwise-aligned ridges Kay Schäfer, Juan Pedro Mellado	Less restrictive self-preservation scalings for non-constant spreading rate axisymmetric jets Kenneth Hinh, Robert Martinuzzi, Craig Johansen	Morphology-Based CNN Recognition of Transitional States on Finite Cylinder Yu-Hsiang Chen, Jiun-Jih Miau, Yng-Ru Chen	Eccentricity Effects on Upward Gas-Liquid Flow Regimes in Vertical Annular Channels Egemen Bilgin, Stavros Tavoularis	Turbulent drag decomposition over porous anisotropic substrates Noe Jean Etienne Faure, Ricardo Garcia-Mayoral
3	10:40am	Uncovering Friction-Dominant Structures in Turbulence via DNS and Explainable AI Sergio Hoyas Calvo, Andres Cremades, Federica Tonti, Ricardo Vinuesa	Effect of Reynolds Number on the Turbulent Flow Characteristics of Offset Synthetic Jets Keziah Naa Densua Hammond, Jessica Meilleur, Ebenezer Essel	Turbulent energy cascades in transitional magnetohydrodynamic flows Nicholas Williams, Alessandro De Rosis, Alex Skillen	Turbulence anisotropy in a bubbly vertical channel flow with topological changes Arturo A. Arosemena, Davide Procacci, Simone Di Giorgio, Jannike Solsvik, Shahab Mirjalili	Velocity-stress scale-dependent admittance for turbulence over textured surface Joy Chen, Guilhem Cabannes, Zengrong Hao, Ricardo García-Mayoral
11:00am – 11:20am		Coffee Break				

Session 15		15A: TurbBL&WallBTurb 10 Location: Hall 2 Chair: Daniel Chung, University of Melbourne, Australia	15B: JW&SepFl 7 Location: Forum 1A Chair: George Papadakis, Imperial College London, United Kingdom	15C: CohStruct 7 Location: Forum 1B Chair: Davide Gatti, Karlsruhe Institute of Technology, Germany	15D: LES&DNS 6 Location: Forum 2 Chair: Bernard Geurts, University of Twente, Netherlands	15E: EnvFl 1 Location: Forum 3A&B Chair: Amelie Ferran, Norwegian University of Science and Technology, Norway
1	11:20am	Turbulent Transport of Mass and Momentum in Open-Channel Flow Over a Heterogeneous Particle Bed Sourabh Apte, Phurin Nilket	How do three-dimensional wake patterns affect forces on trapezoidal flags Agathe Schmider, Gaetan Raynaud, Karen Mulleners	Estimation of power spectra and cross-spectra for all three velocity components from PIV measurement data Lionel Larchevêque, Deepak Prem Ramaswamy, Anne-Marie Schreyer	Particle entrainment mechanisms by small-scale turbulent vortex via direct numerical simulations Rajesh Ramesh, Yulia Peet	Characterizing Atmospheric Turbulence Fluctuations Across Scales in the North Atlantic Using Shipborne Lidar Rafael Bölsterli, Felix Kelberlau, Yannick Jooss, Tania K. Bracchi, R. Jason Hearst
2	11:40am	Boundary layers and transport in stratified inclined duct flow Rundong Zhou, Adrien Lefauve, Roberto Verzicco, Detlef Lohse	Dynamic stall onset delay in turbulent environments Sahar Rezapour, Karen Mulleners	Heat transport in magnetohydrodynamic duct flow regimes with conducting and insulating walls Andreu Queralt, Dmitry Krasnov, Yuri Kolesnikov, Jörg Schumacher	Adaptive Wavelet Simulations of the Wake behind a Fractal Tree with Application to Flapping Insect Flight Julius Bergmann, Thomas Engels, Angela Busse, Kai Schneider	Turbulence Statistics in WRF Hybrid LES model for Temperature and Momentum Kazim Nasir Hussain Sayeed, Clement Blervacq, Nicolas Massei, Luminita Danaila
3	12:00pm	Acoustic Rossiter modes with varying span widths in transonic cavity flows with incoming turbulent boundary layers Yuto Fujimoto, Soshi Kawai	Hydrodynamic study of six rowing blades using multi-layer planar PIV Shanwei Zhou, Arnoud J. Greidanus, Jerry Westerweel, Mark J. Tummers	Influence of Coherent Structures on TKE Decay Ankit Gautam, Tim Berk	Supersaturation fluctuations in stratocumulus clouds Robert Hartmann, Juan Pedro Mellado	Sub-surface turbulence and free-surface features Amelie M. H. Ferran, Ali Semati, Anaïs L. M. Rouaud, R. Jason Hearst, Simen Å. Ellingsen
4	12:20pm	Effects of sediment shape and angularity in oscillatory turbulent flows Umberto Ciri, Tzunami Santiago-Pagán, Sylvia Rodríguez-Abudo, Stefano Leonardi	Mechanism of wake deflection behind two staggered pitching foils Priscila Portocarrero, Arman Hemmati	Experimental study of convective superstructures in low-Prandtl liquid metal at extreme aspect ratio Nayoung Kim, Felix Schindler, Sylvie Su, Sven Eckert, Tobias Vogt	Streamline curvature and crossflow effects on the turbulent boundary layer over a Gaussian bump Nicholas Morse, Ronith Stanly, Ramis Örlü, Philipp Schlatter	X-CAL: Explainable Framework for Causal Analysis of Latent Representations in Shear Flow Marcial Sanchis, Ricardo Vinuesa
12:40pm – 1:30pm		Lunch				

Session 16	1:30pm	Invited Lecture 6 Location: Hall 2 Chair: Suad Jakirlic, Technical University of Darmstadt, Germany Turbulence Modelling in the Age of GPU Power Florian Menter, Katia Guseva, David Flad, Patrick Sharkey, André Nogueira, Rodrigo Peralta				
Session 17		17A: TurbBL&WallBTurb 11 Location: Hall 2 Chair: Yohei Morinishi, Nagoya Institute of Technology, Japan	17B: DragRed&FlContr 3 Location: Forum 1A Chair: Koji Fukagata, Keio University, Japan	17C: MultPhaseFl 4 Location: Forum 1B Chair: Stavros Tavoularis, University of Ottawa, Canada	17D: Rough&PorWall 3 Location: Forum 2 Chair: Kazuhiko Suga, Otemon Gakuin University, Japan	17E: TurbModel 2 Location: Forum 3A&B Chair: Stefan Wallin, KTH, Sweden
1	2:30pm	Highly resolved spatio-temporal measurements of the near-wall turbulent pipe flow up to Re_τ = 45 000 Christian Willert, Joachim Klinner, Daniel Schanz, Lorenzo Magnani, Alessandro Talamelli, Gabriele Bellani	Flow control in water using pulsed laser Rainer Hain, Vanessa Reemts, Christian J. Kähler	An improved Langevin subgrid-scale dispersed phase model for large-eddy simulation of bubble-laden turbulent flows Fang-yu Chen, Chun-Xiao Xu, Wei-Xi Huang	Effect of spatial arrangement and clustering of roughness elements on drag in turbulent flows Sina Nozarian, Mahdi Abkar, Pourya Forooghi	Analysis of dynamo effect in MHD turbulent channel flow Pinzhong YANG, Fujihiro HAMBA
2	2:50pm	Characterisation of turbulent boundary layer interfaces subjected to freestream turbulence assessed by local injection of tagged particles in air Agastya Parikh, Srikar Yadala, Leon Li, Rafael Bölsterli, Christian J. Kähler, R. Jason Hearst	Zero-shot transfer of flow-control Strategies for Turbulent Wings using Multi-Agent Reinforcement Learning Pol Suárez, Yuning Wang, Mathis Bode, Ricardo Vinuesa	Effect of gravity on sub-Kolmogorov inertial particles in a turbulent-non turbulent interface Julian Reis, Amélie Ferran, Martin Obligado, Alberto Aliseda	Time response of unsteady channel flows under the combined effects of a pressure gradient and roughness Mariadebora Mauriello, Bharath Ganapathisubramani, Neil Sandham	Propagation of turbulence into stratified fluids subjected to oscillating grid turbulence Charbel Bassil, Wagih Abu Rowin, Manikandan Balasubramaniyan, Andrew Western, Joseph Klewicki, Jimmy Philip
3	3:10pm	Experimental and Numerical Investigation on Preferential Alignment of Kolmogorov-Size Fibers in Turbulent Channel Flow Eliza Coliban, Domenico Zaza, Alfredo Soldati	Experimental and numerical studies on turbulence structures in wake of wall-mounted finite square cylinder in turbulent boundary layer of viscoelastic fluids Shinji Tamano, Ryuga Sumi, Ayato Yokoi, Masakazu Muto	Inertia-dependent scaling of particle clustering and spreading in axisymmetric reattachment flows Giuseppe Rosi, Ilber Ceylan, Filippo Colombo, David Rival, Georg Garnweitner	Toward prediction of temperature roughness function for turbulent heat transfer over rough surfaces Yusuke Kuwata, Kuga Terada, Yuki Adachi, Na Donggeon, Kazuhiko Suga	Particle clustering regimes within horizontal annular pipe with inner wall rotation: a sensitized RSM study Xiaoyu Wang, Jeanette Hussong, Suad Jakirlic
4	3:30pm	Morphing Surface Actuation of a Turbulent Boundary Layer with VLSM-Matched Traveling Waves Alexey Zhelebovskiy, Mitul Luhar, Ian Jacobi	Experiments and numerical studies on traveling wavy wall for drag reduction in zero-pressure-gradient turbulent boundary layer Yasuhiro Yoshida, Akira Murata, Kaoru Iwamoto	Multiscale patterns on a free surface by turbulent wake Yutaro Motoori, Takaya Masuda, Augusto Zanca, Susumu Goto	Thermal boundary layer development over step change in surface roughness Shilpa Vijay, Beverley McKeon	A multi-parameter correlation for the roughness function in turbulent pipe and channel flow Ata Sojoudi, Donald J Bergstrom
3:50pm – 5:00pm		**Session 18: Poster Interact + Coffee Break**				

Session 19		19A: ML&DataDModel 3 Location: Hall 2 Chair: Suad Jakirlic, Technical University of Darmstadt, Germany	19B: Aerodyn&Acous 2 Location: Forum 1A Chair: Ahmed Naguib, Michigan State University, United States of America	19C: HomTurb 2 Location: Forum 1B Chair: Ianto Cannon, University of Bremen, Germany	19D: Heat&MassTransf 1 Location: Forum 2 Chair: Alexander Stroh, Institute of Fluid Mechanics (ISTM), Karlsruhe Institute of Technology (KIT), Germany	19E: EnvFl 2 Location: Forum 3A&B Chair: Ricardo Garcia-Mayoral, University of Cambridge, United Kingdom
1	5:00pm	Event-based Lagrangian particle tracking for turbulent shear flows Sebastian Sachs, Jan Heiland, Christian Willert, Massimiliano Rossi, Christian Cierpka	Effect of localised wall heating on crossflow instability in a swept-wing boundary layer Gaia Barocco, Yifu Chen, Marina Barahona, Jordi Casacuberta	Breakup of flexible fibres in homogeneous isotropic turbulence Lucas Menez, Stefano Olivieri, Andrea Mazzino, Marco Edoardo Rosti	Spectral dissimilarity between momentum and heat transfers in transitional and turbulent plane Couette flows Kengo Suetsugu, Takahiro Tsukahara, Takuya Kawata	Effect of Gas-Phase Reynolds Number on Gas-Liquid Mass Transfer in a Turbulent Air-Water Channel Flow Adharsh Shankaran, R. Jason Hearst
2	5:20pm	Neural-network-based plasma-actuated flow separation control in a suddenly expanded duct: an eddy-resolving RANS modeling Tarik Corbo, Suad Jakirlic	Lift response of a finite-wingsail to boundary layer turbulence. Clément Bouhourd, Laurent Perret, Carlo Cossu	Temporal tracking of the intense vorticity structures in isotropic turbulence: lifetime dynamics Lucas Fonseca, Afonso Ghira, Carlos Bettencourt Silva	Helicoclinicity: Helicity effects on passive scalar transport in inhomogeneous turbulence Nobumitsu Yokoi	Simultaneous Measurements of Surface Topology and Velocity Fields on Both Sides of the Gas-Liquid Interface Petter Rikheim Benonisen, Srikar Yadala, Leon Li, Ali Semati, Simen Ådnøy Ellingsen, R. Jason Hearst
3	5:40pm	Experimental study on scalar source estimation by active learning enhanced physics-informed neural network Yanda Tan, Ming Liu, Yosuke Hasegawa	Turbulence Statistics in a Boundary Layer of a Controlled Diffusion airfoil Airfoil at High Angle-of-Attack} Ziyang Zhou, Stephane Moreau, Marlene Sanjose	Spatio-temporal energy spectra of drops in turbulence Ianto Cannon, Daniel Morón, Alberto Vela-Martín, Marc Avila	Influence of streamwise rotation on plane Couette flow with a passive scalar Geert Brethouwer	Effects of Gas-Phase Turbulence on the Dynamics of Deformable Gas-Liquid Interfaces Youssef Elashmawi, Leon Li, Simen Å. Ellingsen, R. Jason Hearst

Friday, 31 July

Session 20		20A: Instab&Trans 4 Location: Hall 2 Chair: Christian Kaehler, Bundeswehr University Munich, Germany	20B: Rough&PorWall 4 Location: Forum 1A Chair: Dea Daniella Wangsawijaya, University of Southampton, United Kingdom	20C: Heat&MassTransf 2 Location: Forum 1B Chair: Shuisheng He, University of Sheffield, United Kingdom	20D: ComprFl&ReactFl Location: Forum 2 Chair: Kenya Kitada, Kyoto University, Japan	20E: Strat&Buoy Location: Forum 3A&B Chair: Victor Avsarkisov, Universität Hamburg, Germany
1	8:30am	Forcing length-scale effects on the turbulent transition in internally heated and internally cooled convection Marten Klein, Heiko Schmidt, Alan R. Kerstein	Mean momentum balance and power loss in smooth and rough-wall pipe flows laden with particles Jimmy Philip, Leon Chan, Tony Zahtila	Influence of surface roughness topography on heat transfer in turbulent flows Himani Garg, Karl-Johan Nogenmyr, Alexander Stroh	Numerical simulation of spray combustion using interface-resolved compressible Eulerian/Lagrangian framework Kenya Kitada, Hikaru Arita, Ryoichi Kurose	Stratified mixing layers experiments in sodium and water Ralf Kapulla, Ulrich Doll
2	8:50am	Weakly nonlinear optimal perturbations for shear flow Nobutaka Taniguchi, Aiko Yakeno	Smooth-to-rough-to-smooth: effects of finite roughness fetch upstream of a rough-to-smooth step change Martina Formichetti, Dea D. Wangsawijaya, Sean Symon, Bharathram Ganapathisubramani	Turbulent Convective Heat Transfer from Realistic Ice Morphologies Riccardo Gaudioso, Barış Gökçay, Antonella Abbà, Mariachiara Gallia	A Novel Semi-Implicit Pressure-Based Solver for LES of Compressible Flows Radouan Boukharfane	Statistically stationary Rayleigh-Taylor turbulence Chian Yeh Goh, Guillaume Blanquart
3	9:10am	Identifying efficient routes to laminarization using reduced order models and constrained optimization Jake Buzhardt, Michael D. Graham	Self-similar motions of wall-attached structures in a turbulent boundary layer over cubical roughness Junwoo Jae, Min Yoon, Jinyul Hwang	Dissimilar destruction of turbulent momentum/heat fluxes in a minimal channel flow Mamoru Takahashi, Kenta Suzuki, Koichi Tsujimoto, Toshitake Ando	Optimal control of compressible wake flow using plasma actuators based on input-output analysis Xu Zhang, Deli Li, Guangrui Sun	Anisotropic increments in 2D decaying stratified turbulence Thibault Leduque, Alexandre Delache, Fabien Godeferd
4	9:30am	Lyapunov Spectrum of the Rayleigh-Taylor Instability Rachel Mead, Daniel Israel, Venkat Raman	Modelling friction and heat transfer in turbulent forced convection over porous substrates Aneek Chakraborty, Stefan Hickel, Davide Modesti	Thermal entry effects in turbulent pipe flows Jonathan Neuhauser, Davide Gatti, Bettina Frohnapfel	K-ω SST based hybrid RANS/LES simulation for supersonic and hypersonic flows Camille Gouin, Laurent Muscat, Marina Olazabal-Loumé	DNS of the plane Couette flow at high friction Richardson numbers Victor Avsarkisov, Sergio Gandía-Barberá, Sergio Hoyas
9:50am – 10:10am		Coffee Break				

Session 21		21A: TurbTheory 4 Location: Hall 2 Chair: Godfrey Mungal, Santa Clara University, United States of America	21B: TurbModel 3 Location: Forum 1A Chair: Florian Menter, Ansys Germany GmbH, Germany	21C: Aerodyn&Acous 3 Location: Forum 1B Chair: Angela Busse, TU Berlin, Germany	21D: ComprFl Location: Forum 2 Chair: Hiromichi Kobayashi, Keio University, Japan	21E: DragRed&FlContr 4 Location: Forum 3A&B Chair: Rodrigo Vilumbrales-Garcia, University of Michigan, United States of America
1	10:10am	Two-dimensional turbulent condensates without bottom drag Adrian van Kan, Alexandros Alexakis, Edgar Knobloch	Modelling turbulence with fractal entangled vortex tubes ZISHUO HAN, WEIYU SHEN, YUE YANG	Experimental comparison of dynamic stall across three distinct airfoils Dylan Hilman, Sina Ghaemi	Experimental Studies of the Thermodynamic Fields of a Subsonic Compressible Shear Layer Carson Kipp, Mark Rennie, Stanislav Gordeyev	Effect of manipulating logarithmic law on friction drag reduction in a turbulent channel flow Yusuke Nabae, Hiroya Mamori, Hiroshi Gotoda, Koji Fukagata
2	10:30am	New observations on strain-rate dynamics near inhomogeneous fluid interfaces Pedro D. Alves, Oliver R. H. Buxton, Carlos B. da Silva	A new perspective on wall-modelled large-eddy simulations Stefan Wallin	Free-stream turbulence effects on bluff bodies' drag and wakes : from academic to realistic designs Pierre-Yves PASSAGGIA, Ahmed Abed-Meraim, Azeddine Kourta	LES of supersonic air inlet buzz phenomenon with a laminar vs turbulent boundary layer on the external compression ramp Stéphane Jamme, Samuel Deleu, Marc Montagnac, Romain Gojon, Jérémie Gressier	Drag reduction characterization of spray-on superhydrophobic surfaces in a turbulent channel flow Parth Devrajbhai Khokhani, Bozhong Zhuang, Fai-Wei Wang, Harish Ganesh, Matthew Bross, Anish Tujeta, Steven Ceccio
3	10:50am	Dominant vorticity/strain cancellations in the nonlinear pressure-Poisson source of turbulent channel flow Jonathan Massey, Joseph Klewicki, Beverley McKeon	Recursive neural-network-based subgrid-scale model for large eddy simulation: turbulent channel flow Chonghyuk Cho, Haecheon Choi	Large scale signature of unsteady separation over an oscillating cube Antoine Myskiw, Christophe Sicot, Yann Haffner, Jacques Borée	Experimental analysis of transonic buffet on a swept wing at high Reynolds number Tobias Huber, Christopher J. Schauerte, Johannes Bosbach, Robert Konrath, Reinhard Geisler, Florian Philipp, Anne-Marie Schreyer	Spanwise wall oscillations for drag reduction, without walls Karl Vieths, Davide Gatti, Maurizio Quadrio
4	11:10am	Probability density functions for homogeneous isotropic turbulence Jannis Heinrich Weckesser, Simon Görtz, Johannes Heinrich Conrad, Martin Oberlack	Generalized Moody diagram for wall modeled large eddy simulation including unresolved near wall separation Ho Jun Kim, Tamer A. Zaki, Charles Meneveau	Effect of freestream turbulence on the unsteady wake characteristics of a notchback Ahmed body Ashim Chhetri, Ebenezer Ekow Essel	Numerical Investigation of the Post-Shock Region of Transonic Buffet Thomas Lürkens, Matthias Meinke, Dominik Krug, Wolfgang Schröder	Understanding the drag of heterogeneous and sparse soft biofilms Rodrigo Vilumbrales-Garcia, Jon B. Estrada, Harish Ganesh
11:30am – 12:00pm		Closing Ceremony				

List of Poster Interact Presentations

1. Reinforcement learning based control of the Kelvin Helmholtz mode in 2D incompressible magnetohydrodynamics
   Sergio Augusto Angelini, Alex Skillen, Malgorzata Zimon, Wei Pan, Mingfei Sun

2. Spectral analysis of pressure measurements over a modified Gaussian Boeing bump
   Nissrine Aziz, Theresa Saxton-Fox

3. Water-hammer jetting emanating from impacting drops
   Vladimir Bogdanov, Felix Schranner

4. Energy dissipation of Oldroyd-B fluids in plane Couette flow
   Haoting Grange Chen, Sergei Chernyshenko, Andrew Wynn

5. Characteristics of a compressible backward-facing step flow
   Kung-Ming Chung, Kao-Chun Su

6. Wavepacket approximations to resolvent analysis for wall-bounded parallel shear flows
   Barbara Lopez-Doriga, Scott Dawson

7. Towards resolving turbulent two-phase boundary layers in air lubrication by multibeam sonar technology
   Malte Skyberg, Claes Poulsen, Pourya Forooghi, Ulrich Doll

8. Unsteady perturbations in two-dimensional turbulence
   Guoyu Fan, Wouter Bos

9. Scattering models for turbulence spectra
   Enrico Foglia, Stephane Moreau, Michael Bauerheim, Thierry Jardin

10. Heat transfer, flow patterns, and resulting stratification in 2-D vertical convection: A systematic study
    Martin Goxe, Michael Le Bars, Julie-Anne Zambaux

11. Uncertainty in state estimation of turbulent channel flow from wall observations
    Fan Fei, Ming Liu, Yosuke Hasegawa

12. A mode-switching wire system for thermal boundary layer measurements
    Yuna Hattori, Claudia E. Brunner, Clayton P. Byers

13. Physics-guided adaptive correction for data-driven turbulence modeling
    Seoyeon Heo, Yeji Yun, Junho Eom, Solkeun Jee

14. Effects of flow control on drag and wake dynamics of a vehicle model
    Mohammed Khalid Hossen, Mohammad Saeedi

15. Impact of coalescence modelling on turbulence statistics in multiphase flow simulations
Jordi Poblador Ibanez, Bendiks Jan Boersma

16. Application of the partially-averaged Navier-Stokes model to the inverse chevron shock tube configuration
Jeremie A. Janin, Chad D. Meyer, Juan A. Saenz, Daniel M. Israel

17. Adjoint-based thermal source estimation in buoyancy-affected turbulent flows in complex channels
Yukinori Kametani

18. Machine-learning-based prediction of a scalar source location from remote sensors in turbulent channel flow
Changbeom Kim, Sehyeong Oh, Haecheon Choi

19. Experimental study of bleeding jet structure behind isotropic porous cylinders
Chansoo Seol, Jihoon Jeong, Taehoon Kim

20. Study on the effect of MHD interaction on turbulent Taylor-Couette flow with end walls
Hiromichi Kobayashi, Takahiro Hasebe, Katsumi Namba, Takayasu Fujino, Hidemasa Takana

21. Modelling strong adverse pressure gradient flows using a two-layer Reynolds stress model approach
Yuri Alexander Laar, François Chedevergne, Hervé Bezard, Aimad Er-Raiy

22. Effect of wall heating and high enthalpy on separation in hypersonic shock boundary layer interaction
Vijaya Lahari, Soorya Sridhar, Harsha Rathi, Krishnendu Sinha

23. Direct numerical simulation of a turbulent plane Couette flow over a rod-roughened wall
Sung Min Lee, Jae Hwa Lee

24. Transient growth in unsteady gust-airfoil encounters
Alec Linot, Kunihiko Taira

25. An iterative model for mean velocity and total shear stress profiles in turbulent boundary layers with adverse pressure gradients
Fuzhou Lyu, Chunxiao Xu

26. Passive manipulation of log-law constants in turbulent channel flow using riblets and thermal stratification
Hiroya Mamori, Yutaro Koide, Yusuke Nabae, Menglei Wang, Takeshi Miyazaki

27. Local flow influence on inertial particle divergence in isotropic turbulence
Keigo Matsuda, Thibault Maurel-Oujia, Kai Schneider

28. Response of turbulent band formation to temporally decreasing Reynolds number in plane channel flow
Ryoko Ono, Kazuki Kohyama, Yuki Matsukawa, Takahiro Tsukahara

29. An investigation into the aerodynamic roughness of sea surface using the data from an offshore meteorological tower
Y. H. Chen, Jiun-Jih Miau, Y. R. Chen, C. Y. Lee, H. S. Chi, C. Y. Shang, D. J. Doong, Y. M. Fang, Y. S. Tsai, J. C. Juang

30. Prediction of particle-laden turbulent flows using long short-term memory neural networks
Lee Mortimer, Michael Fairweather

31. Stationary homogeneous Rayleigh-Taylor turbulence in a triply periodic box
Aaron Nelson, Guillaume Blanquart

32. Pressure PIV analysis of a hovering UAS rotor wake
Adam Nickels, James Goldschmidt, Matthew Bross, Jeff Harris

33. Replicating canopy turbulence with a novel forest analog
Isabella Decan, Reban Niraula, Clayton Byers, Kelly Huang

34. DNS study of turbulent flow through a slanted duct
Rafae A. Shami, Taylor C. Opperman, Bing-Chen Wang, Mark S. Tachie

35. Riblet-induced pulsating flow effect for drag reduction in wall-bounded turbulence
Zhaoyang Ou, Wenyuan Zhou, Yalin Tang, Fanhong Liu, Yang He, Weizheng Yuan

36. Added drag on acoustic liners in presence of grazing turbulent flow and acoustic waves
Angelo Paduano, Francesco Avallone, Francesco Scarano

37. Evaluating the role of trip wire diameter in the development of restricted nonlinear boundary layers
Alexandra Risha, Benjamin Minnick, Dennice Gayme

38. Particle clustering and deposition of polydisperse clouds within accelerating flow fields
Denis Sotomayor-Zakharov, Giussepe A. Rosi, Mariachiara Gallia, David E. Rival

39. Yo-yoing of a viscoelastic shear layer
Giulio Foggi Rota, Jason Tang, Piyush Garg, Marco Edoardo Rosti

40. Insights into the near-wall vorticity dynamics via direct numerical simulations of channel flows subjected to impulsive Reτ change
Anthony Settlemier, Saikishan Suryanarayanan, Garry Brown
Influence of scale interactions on pollutant ventilation mechanisms in a turbulent street canyon
Maxime Sicat, Romain Mathis, Frédéric Moulin, Sébastien Cazin, Yara Abidine, Jean-Dominique Barron

41. Mean temperature model in incompressible wall-bounded turbulence over a wide range of Prandtl numbers
Justin E. Ka Ip Sun, Lin Fu

42. Prandtl number and Reynolds number effects on passive scalar in turbulent annular pipe flow using a stochastic model
Pei-Yun Tsai, Marten Klein, Heiko Schmidt

43. Multi-scale analysis on amplitude and frequency modulation in turbulent boundary layer
Abhishek Tyagi, Sourabh Diwan

44. Turbulent drag reduction via transverse wall oscillations: Evaluation of active and passive approaches
Michael Patrick Whitmore, Godfrey Mungal

45. Optimization of distributed jet control for turbulent flow separation on a curved ramp
Zhi Wu, Ge Xu, Shengtai He, Yu Zhou

46. Interscale energy transfer in turbulent stripe structure in a transitional plane Couette flow
Yuki Yamaguchi, Takahiro Tsukahara, Takuya Kawata

47. Direct numerical simulation of the compressible turbulent boundary layer over a rod-roughened wall
Su Youtian, Huang Weixi, Xu Chunxiao

Index of Authors

Sponsors

The local organizing committee is grateful for the financial support provided by the following

LaVision
FOCUS ON IMAGING

CADFEM

DANTEC DYNAMICS

Ansys
part of SYNOPSYS®

ELSEVIER

DFG Deutsche Forschungsgemeinschaft
German Research Foundation

CRC/Transregio 150
Turbulent, chemically reactive multi-phase flows near walls

SPP 2410 CoScaRa

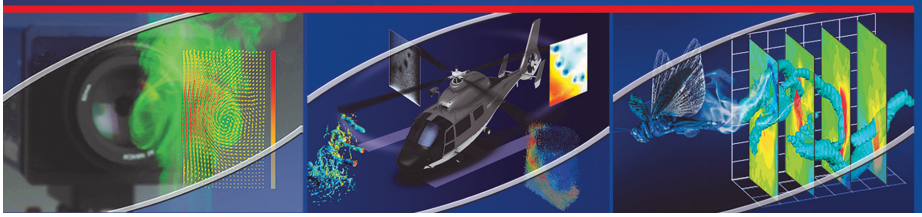
SIEMENS

LAVISION

FOCUS ON IMAGING

Innovative Laser Imaging Systems

- Flow Field Analysis in Gases, Liquids & Multi-Phase Flows
- Stereo-, Micro-, Time-Resolved and Tomographic PIV
- Shake-the-Box - Time-Resolved 3D-PTV at High Seeding Densities
- Air and Heat Flow Visualization with FlowBOS
- Pressure from PIV
- Temperature, Size and Concentration Measurements
- Laser Induced Fluorescence
- Large Selection of Hardware Components with Full Software Control by DaVis



LaVision GmbH
Anna-Vandenhoeck-Ring 19
37081 Göttingen / Germany
Tel. +49 551 9004 0
Email: sales@lavision.com
www.lavision.com

Empowering Digital Engineering

Better performing and more sustainable. Digital engineering involves tapping the full potential of technical creativity, precise data models, and clever workflows. This ensures that a good idea results in an excellent product – for manufacturers, customers, and the environment.

Simulations are a pivotal technology for this. From initial brain-storming, variant comparisons, concept development, and material selection to aspects such as manufacturability, operation, and recycling, simulation quickly, transparently, and reliably provides answers to countless physical questions from the entire life cycle of products and processes. The name CADFEM has been synonymous with simulation since 1985 and has been supporting companies, researchers, and universities in the successful use of Ansys and other simulation products ever since.

This is made possible by the CADFEM team of over 600 employees in Europe, India and Southeast Asia (APAC). Through training offers, support, project work, contract calculations, and IT services, they ensure a seamless implementation of the simulation software. Moreover, data management solutions, automation, workflows, customization, and AI-integration by CADFEM make simulation an integral part of highly efficient, tailor-made digital engineering.

Ansys & CADFEM

Ever since CADFEM was founded in 1985, it has been a close sales and technology partner of **Ansys**, the world's largest developer of simulation software. In July 2025, **Synopsys**, the market leader in EDA and chip design, acquired Ansys. Ansys is now part of Synopsys, Inc., and together they will shape the digital development of increasingly complex product generations in many areas of application and industries.

The ecosystem of this new technology leader also includes the CADFEM companies: As an **Ansys Elite Channel Partner** in Europe and in APAC, CADFEM remains the proven center of excellence for all sales and technical matters relating to Ansys: from the procurement of licenses and the training and further education of users to support and supplementary services.

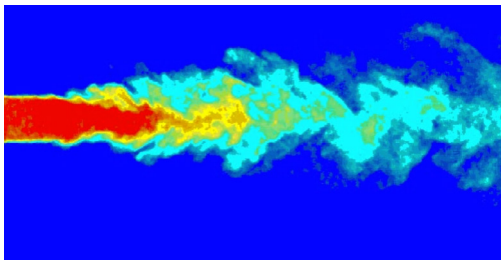
Furthermore, as an **Ansys Services Partner** for Digital Engineering, CADFEM is certified to support customers in the digitalization of their engineering processes. Last but not least: As an **Ansys Systems Integrator Partner,** CADFEM meets all the requirements to implement and operate complex IT environments for HPC applications for customers. This ranges from local hardware as a private cloud to public cloud solutions from Ansys based on AWS or Azure

cadfem.net

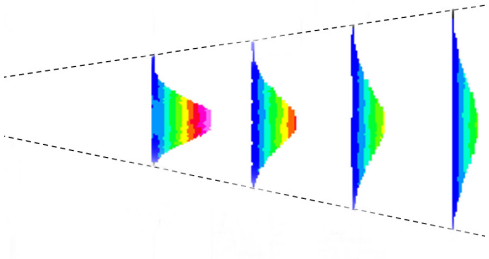
Ansys part of SYNOPSYS | ELITE CHANNEL PARTNER

DANTEC DYNAMICS

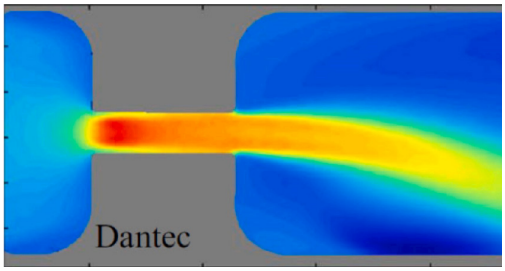
Advanced techniques for turbulence measurements



Laser Induced Fluorescence (LIF):
Air jet mixing with still air

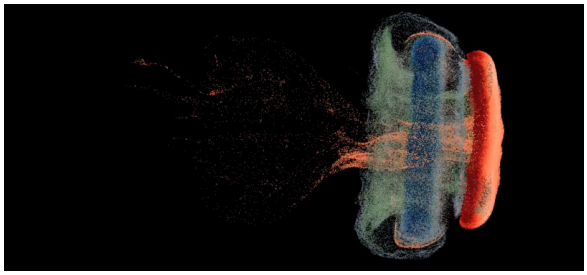


Constant Temperature Anemometry (CTA): Air jet flow mapping

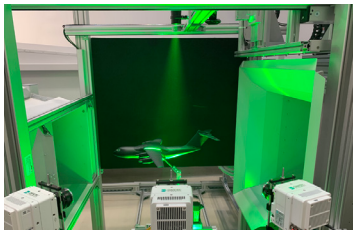


Micro PIV: flow in an 80 µm wide channel, mean velocity up to 230 m/s.

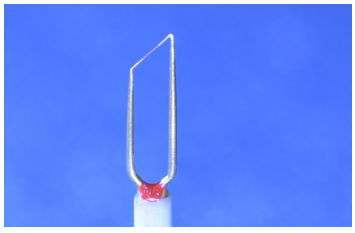
Ergin, F. G., An automatic static masking technique using Particle Image Velocimetry image ensembles, Exp. Thermal and Fluids Science 128 (2021)



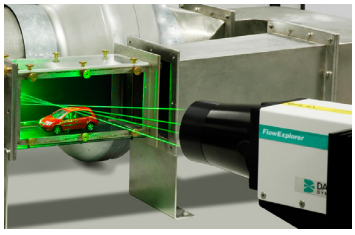
Tomographic PTV:
Leapfrogging vortex rings.



Particle Image Velocimetry
Courtesy of UniBw, Institute for Aeronautical Engineering



Constant Temperature Anemometry



Laser Doppler Anemometry

Contact us: germany@dantecdynamics.com

www.dantecdynamics.com

Developing the Next Generation of Engineers

Ansys, part of Synopsys, is a global leader in engineering simulation, providing advanced multiphysics solutions that help organizations predict real-world performance, reduce physical prototyping, and accelerate innovation.

With more than 50 years of innovation, Ansys has supported industries ranging from aerospace to high-tech in developing smarter, more efficient products. Following Synopsys' acquisition in 2025, the combined company brings together leadership in semiconductor design and simulation to deliver integrated silicon-to-systems solutions - enabling faster development of increasingly complex, AI-driven products.

Ansys Academic Program

The Ansys Academic Program is dedicated to fostering education and advancing academic research through state-of-the-art simulation software and resources. Our mission is to equip educators, students, and researchers with the tools necessary to shape the future of engineering and technology.

Who is the Ansys Academic Program for?

Students

Millions of students utilize Ansys simulation software in the classroom, within projects, for self-learning and on their competitive student team. With Ansys learning resources, students learn complex concepts and are job-ready when they graduate.

Educators

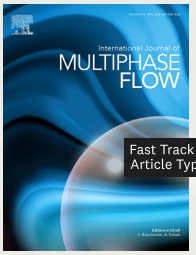
Educators across the world leverage Ansys Academic software to improve learning outcomes, increase retention, and better prepare their students for success. Ansys offers a host of free resources to support curriculum integration.

Researchers

Much of the world's most important research is done on campus, from developing cutting-edge medical breakthroughs to new energy solutions. Ansys-powered simulation helps university research departments push the envelope.

ELSEVIER

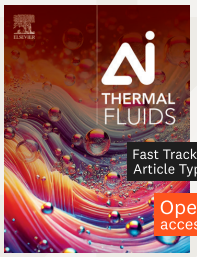
Explore leading journals in Mechanical Engineering: *Fluid and Thermal*

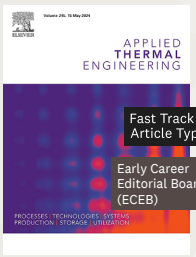


CiteScore **7.0**
Impact Factor **3.9**

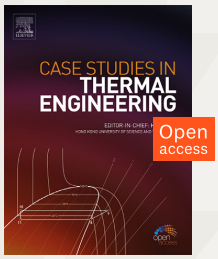
CiteScore **6.8**
Impact Factor **3.5**

CiteScore **11.0**





CiteScore **10.9**
Impact Factor **7.5**



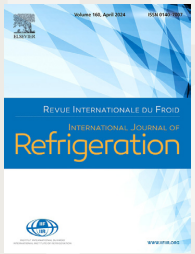
Impact Factor **6.6**

CiteScore **8.8**
Impact Factor **6.2**

CiteScore **11.6**
Impact Factor **6.6**

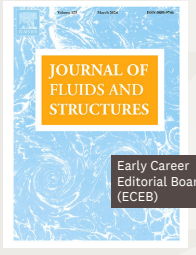
CiteScore **7.7**
Impact Factor **5.6**

CiteScore **10.0**
Impact Factor **4.9**



CiteScore **7.0**
Impact Factor **4.0**

CiteScore **5.5**
Impact Factor **4.8**



CiteScore **7.0**
Impact Factor **3.6**

CiteScore **5.2**
Impact Factor **2.4**

CiteScore **5.2**
Impact Factor **2.7**

Scan the QR code or visit **journalfinder.elsevier.com** to explore your best match.

˙Journal Impact Factor: 2024 Journal Citation Reports® (Clarivate Analytics, 2026) ˙˙Journal CiteScore™: Scopus® Source Data, 2026