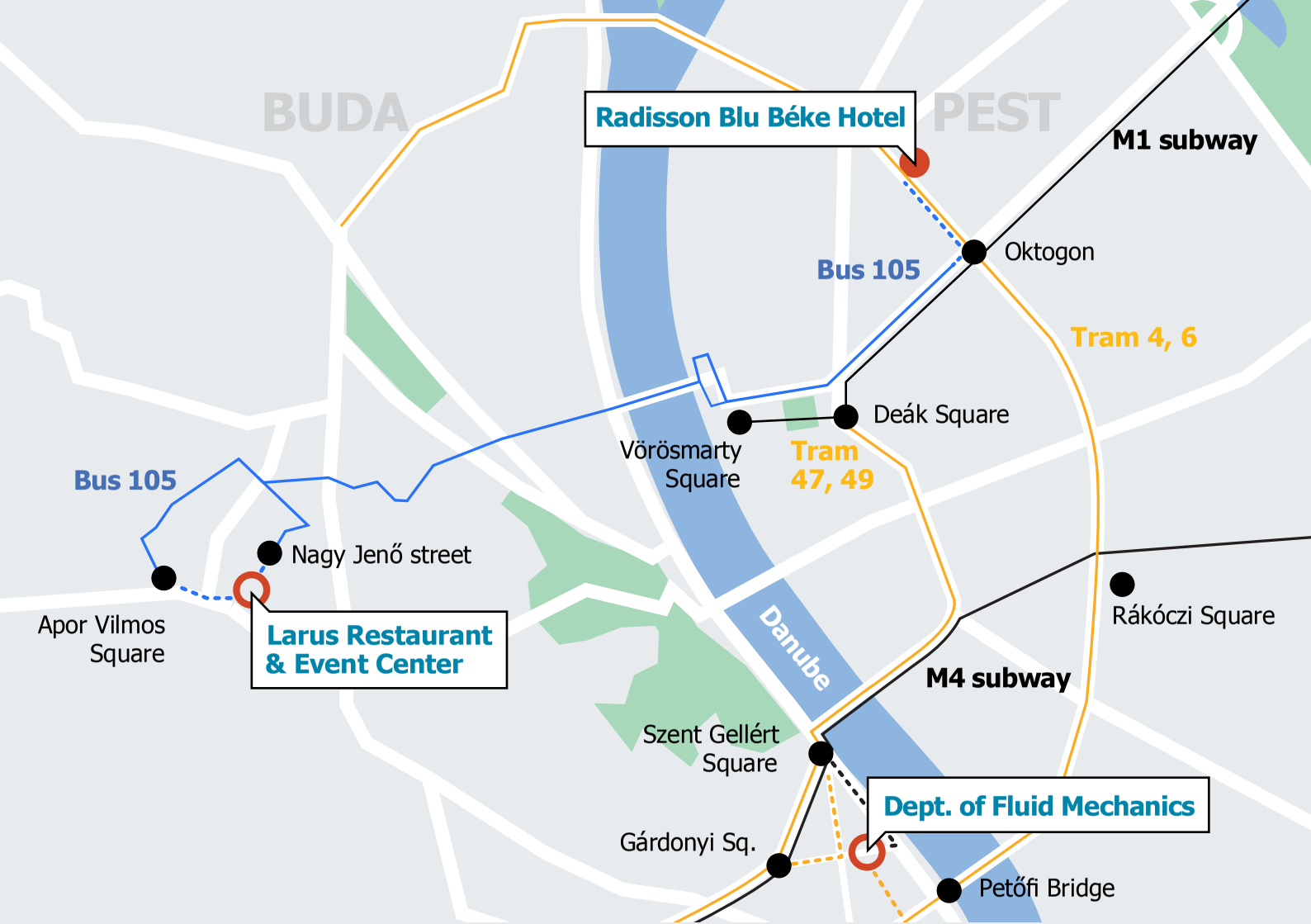
Conference
on Modelling Fluid Flow (CMFF'25)
Radisson Blu Béke Hotel

August 26-29, 2025
Radisson Blu Béke Hotel
Budapest, Hungary

Final Programme

Department of Fluid Mechanics / Faculty of Mechanical Engineering
Budapest University of Technology and Economics


BUDA
PEST
Radisson Blu Béke Hotel
M1 subway
Oktogon
Bus 105
Tram 4, 6
Deák Square
Vörösmarty Square
Tram 47, 49
Bus 105
Nagy Jenő street
Apor Vilmos Square
Larus Restaurant & Event Center
Danube
Rákóczi Square
M4 subway
Szent Gellért Square
Dept. of Fluid Mechanics
Gárdonyi Sq.
Petőfi Bridge

Welcome to the 19th event of the international conference series on Fluid Flow Technologies!

Conference Venue - Buildings of Interest

Radisson Blu Béke Hotel

Teréz körút 43., H-1067 Budapest

From the 27th of August, the Plenary Sessions, oral presentations, and the Workshops will take place in this building. The venue of the Conference, Radisson Blu Béke Hotel at Teréz krt. 43. 1067 Budapest (see the map!)

Department of Fluid Mechanics

Bertalan Lajos u. 4-6., H-1111 Budapest
"AE" building of BME

Registration and Welcome Reception on the **26th of August** will take place in this building. The Department can be reached from Szent Gellért tér/square along the bank of the Danube or through the garden of the University, (take Budafoki út entrance). Also from Petőfi híd/bridge along the bank of the Danube or from Gárdonyi square along Bertalan L. utca (see the map!)

Larus Restaurant & Event Center

Csörsz u. 18/b, H-1124 Budapest

On the **27th of August** from 19:30, the **Gala Dinner** of CMFF Conference will be held in this magical venue. Terrace awaits us from 19:00 with an open bar. Speaches and dinner start at 19:30. From Radisson Hotel walk to Oktogon, take bus 105 towards Apor Vilmos tér, and get off at the final station, to reach Larus Restaurant & Event Center.
On your way back to the hotel walk to Nagy Jenő utca to find the bus. (see the map!)

Conference Secretariat

Department of Fluid Mechanics / Faculty of Mechanical Engineering
Budapest University of Technology and Economics

Bertalan Lajos. u. 4-6., H 1111 Budapest, Hungary
Tel: +36 1 463 26 35
cmff@gpk.bme.hu www.cmff.hu

Registration and Information Desk

Opening hours:

Tuesday 26th of August, 6 pm -8 pm:
Located on the ground floor of the Department of Fluid Mechanics, AE building.

Wednesday and Thursday 27th and 28th of August, 8 am - 3 pm:
Located in the Radisson Blu Béke Hotel

Friday, 29th of August, 8 am-12 pm
Located in the Radisson Blu Béke Hotel

Lunch and coffee breaks

Lunch as well as coffee will be served in the Radisson Blu Béke Hotel.

Transportation

Radisson Blu Béke Hotel is easily accessible by public transport (tram 4/6, bus, M3/M1). You can find more information about public transport on the internet. www.bkk.hu

Restrictions

Recording of any session and sale of any publication not authorised by the Conference Secretariat is prohibited.

Social programmes

Welcome Reception (26th of August, 6 pm - 8 pm)

offered by the Conference Organisers and hosted by the Department of Fluid Mechanics (AE Building).

Gala Dinner (27th of August, 7:00 pm)

to be held at Larus Restaurant & Event Center.

Speaker briefing

• Laptops for PowerPoint and pdf presentations, video projectors and pointers will be available in each conference room.

• Please contact your session chairperson 10 minutes prior to session opening and provide him/her with your data in a written format, in order to make it possible for him/her to introduce you to the audience:

- name of the presenting author
- title
- position
- affiliation

• Please also contact the session secretary 10 minutes prior to session opening to load your PowerPoint or pdf presentation onto the on-site laptop. You have to deliver your PowerPoint or pdf files on a pen-drive.

• Timing of presentation: You are requested to prepare an oral presentation of duration of 15 minutes. Please respect this time limit strictly, in order to avoid the disturbance of the time schedule. Your presentation will be followed by a 5-minute discussion.

The 4 keynote speeches will be in the topics of:

"Multiscale computations of reactive multiphase flows"

by **Prof. K. Luo**

Zhejiang University, Hangzhou (CN)

"A look back on 30 years of turbomachinery research in Europe"

by **Prof. G. Bois**

University of Lille, CNRS, ONERA,
Arts et Metiers Institute of Technology, Lille (FR)

"Macroscopic and Microscopic blood flows"

by **Prof. F. Nicoud**

Université de Montpellier, Montpellier (FR)

"Optical thermometry coupled to the measurement of other quantities (velocity, pressure)"

by **Prof. B. Fond**

ONERA The French Aerospace Lab, Department of Aerodynamics,
Aeroelasticity and Acoustics (DAAA), Paris-Saclay University, Meudon (FR)

CMFF'25 Programme of Tuesday

Dept. of Fluid Mechanics
Budapest University of Technology and Economics
1111 Budapest, Bertalan Lajos utca 4-6

26 August 2025

18:00 - 20:00	**Registration and Welcome Reception**

CMFF'25 Programme of Wednesday

Radisson Blue Béke Hotel

27 August 2025

	Juliet Room	Shakespeare Room	Venice Room
9:00 - 9:10	-	**Welcome Address**	**-**
9:10 - 9:55	**-**	**Plenary Session 1** Invited Speaker: Prof. Kun Luo	**-**
9:55 - 10:25	**Break**	**Break**	**Break**
10:25 - 12:05	**DS**	**WS1**	**WS2**
12:05 - 13:35	**Lunch**	**Lunch**	**Lunch**
13:35 - 14:20	-	**Plenary Session 2** Invited Speaker: Prof. Gérard Bois	**-**
14:20 - 14:50	**Break**	**Break**	**Break**
14:50 - 16:50	**TU**	**WS3**	**TM1**

Larus Restaurant
Csörsz u. 18/b, 1124 Budapest (see map)

19:00 -	**Gala Dinner** Terrace awaits us from 19:00 with an open bar. Speeches and dinner at 19:30.

WS1 **Coupling Discrete Element Method and Computational Fluid Dynamics Workshop**
WS2 **Swirling Flows Workshop**
WS3 **Coupling Discrete Element Method and Computational Fluid Dynamics Workshop**
WS4 **Workshop on Fluid Mechanics education – how to boost for Generation Z?**
WS5 **Atmospheric Flows Workshop:**
Uncertainty Analysis from Measurements to Model Interpretation
WS6 **Advances in Biomedical Flows Workshop**
WS7 **Atmospheric Flows Workshop:**
Uncertainty Analysis from Measurements to Model Interpretation

CMFF'25 Programme of Thursday

Radisson Blue Béke Hotel

28 August 2025

	Juliet Room	Shakespeare Room	Venice Room
9:00 - 9:10	-	**Technical information**	**-**
9:10 - 9:55	-	**Plenary Session 3** Invited Speaker: Dr. Benoît Fond	**-**
9:55 - 10:25	**Break**	**Break**	**Break**
10:25 - 12:25	**WS4**	**IF1**	**TH**
12:25 - 13.55	**Lunch**	**Lunch**	**Lunch**
13.55 - 14:40	-	**Plenary Session 4** Invited Speaker: Prof. Frank Nicoud	**-**
14:40 - 15:10	**Break**	**Break**	**Break**
15:10 - 17:30	**IF2**	**BM1**	**TM2**

CMFF'25 Programme of Friday

Radisson Blue Béke Hotel

29 August 2025

	Juliet Room	Shakespeare Room	Venice Room
9:00 - 11:20	**NN**	**BM2**	**WS5**
11:20 - 11:50	**Break**	**Break**	**Break**
11:50 - 13:50	**BU**	**WS6**	**WS7**
13:50	-	**Closing Ceremony**	-

BM1	**Biomedical Flows**
BM2	**Biomedical Flows**
BU	**Cavitation and Bubbles**
DS	**Dynamic Systems**
IF1	**Internal and External Flows**
IF2	**Internal and External Flows**
NN	**Non-Newtonian and Multiphase Flows**
TH	**Combustion and Thermal Analysis**
TM1	**Turbomachinery**
TM2	**Turbomachinery**
TU	**Turbulent Flow**

Session Identifier	**Plenary Session 1**	**Shakespeare Room**
Chairperson	**Prof. Dominique Thévenin** Laboratory of Fluid Dynamics and Technical Flows, Institute of Fluid Dynamics and Thermodynamics, University of Magdeburg "Otto von Guericke", Germany	
Invited Speaker	**Prof. Kun Luo** State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou, P. R. China	

Wednesday 27. August 9 :10 - 9:55

#116

¬ Multiscale computations of reactive multiphase flows

Xiaofei **Li**, Bingchen **Li**, Wei **Chen**, Junjie **Lin**, Shuai **Wang**,
Kun **Luo,** Jianren **Fan**

State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou, P. R. China

Session Identifier **DS** **Juliet Room**
Session Main Topic **Dynamic Systems**
Chairperson **Prof. Tsutomu Takahashi**
Department of Mechanical Mechanics, Faculty of Engineering, Nagaoka University of Technology, Nagaoka, Japan

Number of presentations 4 Wednesday 27. August 10:25 - 12:05

#5 10:25 - 10:45
¬ Modelling of parametric oscillations in floating bodies
Erik **Silva Fujiyama[1],** Josh **Davidson[2],** Tamás **Kalmár-Nagy[1]**
1 Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.
2 Basque Center for Applied Mathematics, Bilbao, Spain.

#32 10:45 - 11:05
¬ Definition and computation of a flutter safety margin for quadcopters by chaining together multiple 2-DOF aeroelastic models
Dávid András **Horváth[1],** János **Lelkes[2],** Balázs **Farkas[1],** Tamás **Kalmár-Nagy[1]**
1 Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.
2 Robert Bosch Kft., Budapest, Hungary.

#47 11:05 - 11:25
¬ The CFD-based design of a bypass tunnel to provide the cross-flow used in the case of blade cascade aeroelastic study
Pavel **Procházka,** Chandra **S. Prasad,** Pavel **Šnábl,** Vladislav **Skála**
Institute of Thermomechanics, The Czech Academy of Sciences, Prague, Czech Republic.

#49 11:25 - 11:45
¬ Pipe flow analogy in a planar mass-spring-damper system
Róbert **Rochlitz,** Bendegúz D. **Bak**
Department of Fluid Mechanics, Faculty of Mechanical Engineering,
Budapest University of Technology and Economics, Budapest, Hungary.

Session Identifier	**WS1**	**Shakespeare Room**
Title	**Coupling Discrete Element Method and Computational Fluid Dynamics Workshop**	
WS Leaders	**Prof. Viktor Scherer** Ruhr-University Bochum, Bochum, Germany. **Prof. Dominique Thévenin** Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.	

Number of presentations 5 Wednesday 27. August 10:25 - 12:05

¬ ABSTRACT

The present workshop provides a broad view on the description of solid particulate flows with a focus on the combination between Discrete Element Method (DEM) and Computational Fluid Dynamics (CFD), and presents illustrative examples of its application. In the context of DEM/CFD, reacting flows lead to specific challenges that are discussed in several contributions. The need for validation data based on accurate experiments in complex geometries is also highlighted. Several contributions consider pyrolysis, but the workshop is also open for many other applications of particulate flows. Novel trends like the usage of machine learning to enrich DEM/CFD, the combination of resolved and unresolved DEM/CFD in one domain, new approaches regarding the Immersed Boundary Method to describe such systems are also discussed. The organizers are convinced that visiting this workshop will provide an overview of current advances and challenges connected to DEM/CFD simulations.

#115 10:25 - 10:45

¬ Influence of packing density on the calcination process for lime production: A DEM-CFD study

Rezvan **Abdi,** Bo **Jaeger,** Torben **Bergold,** Enric **Illana,** Martin **Schiemann,** Viktor **Scherer**

Institute of Energy Plant Technology, Ruhr-University Bochum, Bochum, Germany.

#109 10:45 - 11:05

¬ Detailed characterisation of pore structure and transport properties of biomass particles during pyrolysis

Ninghua **Zhan[1,3],** Enqi **Liu[1],** Andrea **Dernbecher[2],** Nicole **Vorhauer-Huget[1],** Rui **Wu[3],** Alba Diéguez **Alonso[2],** Abdolreza **Kharaghani[1]**

1 Thermal Process Engineering, Otto von Guericke University Magdeburg, Magdeburg, Germany.

2 Laboratory of Transport Processes, Faculty Biochemical and Chemical Engineering, TU Dortmund University, Dortmund, Germany.

3 School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China.

#112 11:05 - 11:25

¬ Enhancing DEM-CFD simulations with machine-learning-based locally resolved Nusselt number correlations

Ali **Mjalled**[1], Bo **Jaeger**[2], Reza **Namdar**[3], Lucas **Mieg**[1], Enric **Illana**[2], Fathollah **Varnik**[3], Viktor **Scherer**[2], Martin **Mönnigmann**[1]

1 Automatic Control and Systems Theory, Ruhr-Universität Bochum, Bochum, Germany.
2 Energy Plant Technology, Ruhr-Universität Bochum, Bochum, Germany.
3 Interdisciplinary Centre for Advanced Materials Simulation, Ruhr-Universität Bochum, Bochum, Germany.

#96 11:25 - 11:45

¬ Combining the partially stirred reactor with a DEM description: The pyrolysis of biomass

Davide **Mapelli,** Don **Dasun Attanayake,** Berend **Van Wachem,** Fabian **Sewerin**

Mechanical Process Engineering, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.

#114 11:45 - 12:05

¬ A compressible two-fluid model for the simulation of triboelectrification

Jürgen **Abraham**[2], Martin **Gruber**[1], Alexander **Kospach**[2], Mohammadsadegh **Salehi**[2], Stefan **Radl**[1]

1 Institute of Process and Particle Engineering, Graz University of Technology, Graz, Austria.
2 Virtual Vehicle Research GmbH, Graz, Austria.

Session Identifier	**WS2**	**Venice Room**
Title	**Swirling Flows Workshop**	
WS Leaders	**Prof. Đorđe Čantrak,** Department of Hydraulic Machinery and Energy Systems, University of Belgrade - Faculty of Mechanical Engineering, Belgrade, Serbia. **Prof. Alexander S. Ćoćić,** University of Belgrade - Faculty of Mechanical Engineering, Chair for Fluid Mechanics, Belgrade, Serbia.	
Number of presentations 5		Wednesday 27. August 10:25 - 12:05

¬ ABSTRACT

Turbulent swirling flow is one of the most challenging questions that occurs in classical, as well as in modern, both, theoretical and applied fluid mechanics. Submitted papers contribute to theoretical, numerical and experimental research of the turbulent swirling flow in the field of turbomachinery, especially axial fans inbuilt in pipes, as well as in the case when they are used as generators for jet flows. Discussions on turbulence models, as well as application of OpenFOAM and Ansys softwares are always interesting in the research of the turbomachinery driven flows. Complex experimental measurement techniques, such as three-component laser Doppler velocimetry, hot-wire anemometry and particle image velocimetry, are implemented and presented in the papers. One paper deals with application of acoustic modulation for control of the vortex structures in the axisymmetric air jet. In addition, an interesting question in the field of numerics - parallelization on GPU system will attract readers' attention.

#60 10:25 - 10:45

¬ Numerical analysis of swirling flow induced by axial fan

Aleksandar **Ćoćić[1],** Balazs **Pritz[2]**

1 University of Belgrade - Faculty of Mechanical Engineering, Chair for Fluid Mechanics, Belgrade, Serbia.

2 Institute for Thermal Turbomachinery (ITS), Karlsruhe Institute of Techonology (KIT), Karlsruhe, Germany.

#65 10:45 - 11:05

¬ Development of the turbulent swirling flow velocity profiles in the axial fan jet

Novica **Z. Janković,** Đorđe **S. Čantrak,** Dejan **B. Ilić,** Miloš **S. Nedeljković**

Department of Hydraulic Machinery and Energy Systems, University of Belgrade - Faculty of Mechanical Engineering, Belgrade, Serbia.

#71 11:05 - 11:25

¬ Low-amplitude acoustic modulation as a tool for controlling the vortex structures of the turbulent axisymmetric air jet

Nikola **Ćetenović**[1], Dejan **Cvetinović**[1], Aleksandar **Erić**[1], Đorđe **Čantrak**[2], Jaroslav **Tihon**[3], Kazuyoshi **Nakabe**[4], Kazuya **Tatsumi**[4]

1 University of Belgrade, VINCA Institute of Nuclear Sciences, Laboratory for Thermal Engineering and Energy, Belgrade, Serbia.

2 Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia.

3 Institute of Chemical Process Fundamentals, Academy of Sciences of the Czech Republic, Prague, Czech Republic.

4 Mechanical Engineering, Faculty of Engineering, Kyoto University, Kyoto, Japan.

#98 11:25 - 11:45

¬ Using Jacobi Method to solve the two-equation turbulence model for parallelization on GPU computing system

Ivan **Tomanović**, Srdjan **Belošević**, Nenad **Crnomarković**, Aleksandar **Milićević**

Department of Thermal Engineering and Energy, "VINČA" Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia.

#99 11:45 - 12:05

¬ Experimental and numerical investigation of the turbulent swirling flow in pipe behind the axial fan impeller

Milan **Bulajić**, Novica **Janković**, Lazar **Lečić**

Department for Hydraulic Machinery and Energy Systems, Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia.

Session Identifier	**Plenary Session 2**	**Shakespeare Room**
Invited Speaker	**Prof. Gérard Bois** Emeritus Professor ENSAM. Fluid Mechanics Lab. Lille (LMFL), University of Lille, CNRS, ONERA, Arts et Métiers Institute of Technology, Centrale Lille Institut, Lille, France.	
Chairperson	**Prof. János Vad** Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.	
Number of presentations 1		Wednesday 27. August 13:35 - 14:20

#119

¬ A look back on 30 years of turbomachinery research in Europe

Prof. Gérard **Bois**

Emeritus Professor ENSAM. Fluid Mechanics Lab. Lille (LMFL), University of Lille, CNRS, ONERA, Arts et Métiers Institute of Technology, Centrale Lille Institut, Lille, France.

Session Identifier **TU** **Juliet Room**
Session Main Topic **Turbulent Flow**
Chairperson **Dr. Miklós Balogh**
Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

Number of presentations 6 Wednesday 27. August 14:50 - 16:50

#106 14:50 - 15:10
¬ A new viscosity formulation for improved turbulence modeling in Kolmogorov flow

Gergely **Kristóf,** Kinga Andrea **Kovács,** Tamás **Kalmár-Nagy,** Miklós **Balogh**
Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#16 15:10 - 15:30
¬ Assessment of RANS turbulence modelling approaches for pollutant dispersion in vegetated street canyons using periodic boundary conditions

Bálint **Papp,** Ildikó **Troll,** Gergely **Kristóf**
Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#56 15:30 - 15:50
¬ A consistent approach to atmospheric boundary layer simulations using the k-ω SST model

Márton **Pricz,** Bálint **Papp,** Gergely **Kristóf,** Miklós **Balogh**
Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#50 15:50 - 16:10
¬ Investigation of radius ratio effects on velocity statistics in annular pipe flow using one-dimensional turbulence

Pei-Yun **Tsai**[1,2]**,** Li **Toong Yap**[1,2]**,** Marten **Klein**[1,2]**,** Heiko **Schmidt**[1,2]
1 Chair of Numerical Fluid and Gas Dynamics, Faculty of Mechanical Engineering, Electrical and Energy Systems, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany.
2 Scientific Computing Lab, Energy Innovation Center, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany.

#81 16:10 - 16:30

¬ Geometrical optimization of rectangular MVGs delaying boundary layer transition over a flat plate

Márton **Kulcsár,** András **Szabó,** Péter Tamás **Nagy,** György **Paál**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#59 16:30 - 16:50

¬ ODTLES: Large-eddy simulation with autonomous stochastic sub-grid-scale modeling applied to turbulent duct flow

Pavle **Marinković**[1,2]**,** Juan **A.** Medina **Méndez**[1]**,** Marten **Klein**[1,2]**,**

Heiko **Schmidt**[1,2]

1 Chair of Numerical Fluid and Gas Dynamics, Faculty of Mechanical Engineering, Electrical and Energy Systems, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany.
2 Scientific Computing Lab, Energy Innovation Center, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany.

Session Identifier	**WS3**	**Shakespeare Room**
Title	**Coupling Discrete Element Method and Computational Fluid Dynamics Workshop**	
WS Leaders	**Prof. Viktor Scherer,** Ruhr-University Bochum, Bochum, Germany. **Prof. Dominique Thévenin,** Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.	

Number of presentations 5 Wednesday 27. August 14:50 - 16:50

¬ ABSTRACT

The present workshop provides a broad view on the description of solid particulate flows with a focus on the combination between Discrete Element Method (DEM) and Computational Fluid Dynamics (CFD), and presents illustrative examples of its application. In the context of DEM/CFD, reacting flows lead to specific challenges that are discussed in several contributions. The need for validation data based on accurate experiments in complex geometries is also highlighted. Several contributions consider pyrolysis, but the workshop is also open for many other applications of particulate flows. Novel trends like the usage of machine learning to enrich DEM/CFD, the combination of resolved and unresolved DEM/CFD in one domain, new approaches regarding the Immersed Boundary Method to describe such systems are also discussed. The organizers are convinced that visiting this workshop will provide an overview of current advances and challenges connected to DEM/CFD simulations.

#110 14:50 - 15:10

¬ Investigating the influence of particle shape on the pyrolysis of thermally thick particles in DEM/CFD

Bo **Jaeger,** Rezvan **Abdi,** Enric **Illana,** Viktor **Scherer**

Institute of Energy Plant Technology, Ruhr-University Bochum, Bochum, Germany.

#93 15:10 - 15:30

¬ An application of machine learning to compute thermochemistry of reactive flows: A mixture of experts approach

Reza **Namdar,** Mohammad **Norouzi,** Fathollah **Varnik**

Interdisciplinary Centre for Advanced Materials Simulation (ICAMS), Ruhr-University Bochum, Bochum, Germany.

#113 15:30 - 15:50

¬ An open workflow for unsupervised clustering of fluid-particle flows into compartments

Michael **Mitterlindner**[1], Daniel **Berger**[2], Maximilian **Graber**[2], Regina **Kratzer**[3], Markus **Reichhartinger**[2], Stefan **Radl**[1]

1 Institute of Process and Particle Engineering, Graz University of Technology, Graz, Austria.
2 Institute of Automation and Control, Graz University of Technology, Graz, Austria.
3 Institute of Biotechnology and Biochemical Engineering, Graz University of Technology, Graz, Austria.

#111 15:50 - 16:10

¬ Numerical and experimental investigation of low Reynolds number flow in a packed bed of rotated bars

Wojciech **Sadowski**[1], Christin **Velten**[2], Maximilian **Brömmer**[3], Hakan **Demir**[1], Francesca **Di Mare**[1], Katharina **Zähringer**[2], Viktor **Scherer**[3]

1 Chair of Thermal Turbomachinery and Aero Engines, Ruhr University Bochum, Bochum, Germany.
2 The Laboratory of Fluid Dynamics and Technical Flows, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.
3 Institute of Energy Plant Technology, Ruhr University Bochum, Bochum, Germany.

#41 16:10 - 16:30

¬ Equilibrium Positions and Dynamic behavior of thermal prolate particles in shear flow: Influence of particle size

Farshad **Gharibi**, Dominique **Thévenin**

Laboratory of Fluid Dynamics and Technical Flows, University of Magdeburg "Otto von Guericke", Magdeburg, Germany.

Session Identifier **TM1** **Venice Room**
Session Main Topic **Turbomachinery**
Chairperson **Prof. Helmut Benigni**
Institute of Hydraulic Fluidmachinery,
Graz University of Technology, Graz, Austria.

Number of presentations 6 Wednesday 27. August 14:50 - 16:50

#4 14:50 - 15:10

¬ Multi-objective design optimization of a variable-pitch axial flow fan by using CFD-based meta-model

Chan **Lee**[1], Hyung **Jin Lee**[2], Sang **Yeol Lee**[3], Sang **Ho Yang**[3]

1 Department of Mechanical Engineering, Faculty of Mechanical Engineering, University of Suwon, Hwaseong, South Korea.
2 PIDOTEC, Beobwon-ro, Songpa-gu, Seoul, South Korea.
3 Research Lab., Samwon E&B, Siheung, South Korea.

#21 15:10 - 15:30

¬ Influence of cut-back leading edges on efficiency and functionality for an optimized semi-open 2-channel impeller

David **Beck**, Paul Uwe **Thamsen**

Chair of Fluid System Dynamics, Institute of Fluid Mechanics and Technical Acoustics, Technische Universität Berlin, Berlin, Germany.

#35 15:30 - 15:50

¬ Study of the mixing performance of curved blade turbines in a solid-liquid dual impeller stirred system

Laifa **Lu**[1,2], Jiacheng **He**[1,2], Shuiqing **Zhou**[1,2], Weiya **Jin**[1,2],
Zengliang **Gao**[1,2], Diping **Xu**[1,2]

1 College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China.
2 Institue of Innovation Research of Shengzhou and Zhejiang University of Technology, Shengzhou, China.

#31 15:50 - 16:10

¬ Estimation of relation between pressure difference and flow rate in a Francis-turbine spiral case using numerical computation

Muris **Torlak**[1], Adis **Bubalo**[2], Ehlimana **Jugo**[1], Safet **Isić**[3]

1 Department of Energy, Process Technology and Environmental Engineering, Faculty of Mechanical Engineering, University of Sarajevo, Sarajevo, Bosnia and Herzegovina.

2 JP Elektroprivreda BiH dd Sarajevo, Podružnica Hidroelektrane na Neretvi, Jablanica, Bosnia and Herzegovina.

3 Faculty of Mechanical Engineering, University "Džemal Bijedić" of Mostar, Mostar, Bosnia and Herzegovina.

#29 16:10 - 16:30

¬ Optimization of inlet guide vane for large axial fans based on big data analysis

Zijian **Mao**[1,2], Laifa **Lu**[1,2], Shuiqing **Zhou**[1,2,3], Weiya **Jin**[1,2], Zengliang **Gao**[1,2], Diping **Xu**[1,2]

1 College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China.

2 Institute of Innovation Research of Shengzhou and Zhejiang University of Technology, Shengzhou, China.

3 College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China.

#9 16:30 - 16:50

¬ Redesigned adjustable diaphragm for controlling and mitigating the swirling flow instabilities from the conical diffuser of hydraulic turbines

Adrian **Stuparu**[2], Constantin **Tanasa**[1], Alin **Bosioc**[2]

1 Research Institute for Renewable Energies, "Politehnica" University Timisoara, Timisoara, Romania.

2 Department of Hydraulic Machinery, "Politehnica" University Timisoara, Timisoara, Romania.

Session Identifier	**Plenary 3**	**Shakespeare Room**
Session Main Topic	**Plenary Session**	
Invited Speaker	**Dr. Benoît Fond** Department of Aerodynamics, Aeroelasticity and Acoustics (DAAA), ONERA, the French Aerospace Lab, Université Paris Saclay, France.	
Chairperson	**Prof. János Vad** Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.	

Number of presentations 1 Thursday 28. August 9:10 - 9:55

#117

Optical thermometry coupled to the measurement of other quantities (velocity, pressure)

Dr. Benoît **Fond**

Department of Aerodynamics, Aeroelasticity and Acoustics (DAAA), ONERA, the French Aerospace Lab, Université Paris Saclay, France.

Session Identifier	**WS4**	**Juliet Room**
Title	**Workshop on Fluid Mechanics education – how to boost for Generation Z?**	
WS Leader	**Prof. János Vad** Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.	

Thursday 28. August 10:25 - 12:25

¬ ABSTRACT

I have been delivering old-school lectures in Fluid Mechanics (FM) for several years – blackboard and white chalk; fundamentals of underlying physics, colorized by practical examples from everyday life, and by industrial stories from personal experience; soliciting the students to make drawings for fun… Recently, I included visual inserts – photos, videos – in the course, and also provoked some interaction with the students by means of interrupting the lecture with proactive questions, being voluntarily answered by the ambitious students for premium scores. As the official qualification of the lecture series by the students shows, the course is evaluated as a high-rank one – but why, and for how long? I must realize that my students are of Generation Z (born between 1997 and 2012), and thus, they are fully immersed in the digital world. If I disregard this fact, my beloved FM course may collapse in a few years! How to follow the view "Be true to thyself", and thus, to retain the features of value of my classic lecture – and, how to simultaneously accommodate the Gen Z attitude? What will be my actual role, and the exclusive value added by myself – as a human – in FM lectures after three or five years? How to educate "materialized" engineering responsibility in a virtuality-dominated world? How not just to tolerate but even to benefit from the routine use of smartphones and Internet by the students during the courses? How to involve AI? How to "keep it simple", by means of developing a common language for grabbing the attention, and for quickly sharing essential pieces of information? How to tailor FM education for fitting to the demands of industries becoming soon the employers of Gen Z students? How to share the job outlined above among the large-group lecture, small-group seminars, and laboratory teamwork? How to convince Gen Z students that we are on the same side? How to boost FM courses for Gen Z?

Session Identifier **IF1** **Shakespeare Room**
Session Main Topic **Internal and External Flows**
Chairperson **Dr. Amir Keshmiri**
School of Engineering, The University of Manchester, and Manchester University NHS Foundation Trust, Manchester, United Kingdom.

Number of presentations 6 Thursday 28. August 10:25 - 12:05

#108 10:25 - 10:45
¬ Investigation of laminar steady and unsteady flows in gyroid TPMS structures

Kasimhussen **Vhora**[1,2], Dominique **Thévenin**[1], Kai **Sundmacher**[2], Gábor **Janiga**[1]
1 Laboratory of Fluid Dynamics and Technical Flows, Otto von Guericke University, Magdeburg, Germany.
2 Process Systems Engineering, Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany.

#6 10:45 - 11:05
¬ Laminar-turbulent transition in helically coiled reactors. An experimental study with high-speed PIV

Conrad **Müller,** Péter **Kováts,** Dominique **Thévenin,** Katharina **Zähringer**
Laboratory of Fluid Dynamics and Technical Flows, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.

#13 11:05 - 11:25
¬ Laser-optical validation and comparative analysis of numerical heat transfer models for single nozzle impingement flows

Eileen **Trampe,** Jan-Henrik **Rieger,** Dominik **Büschgens,** Christian **Wuppermann**
Department for Industrial Furnaces and Heat Engineering, RWTH Aachen University, Aachen, Germany.

#2 11:25 - 11:45
¬ Influence of a scanning box on the settling time of multi-hole pressure probes

Johann **Puintner,** Gregor **Nicht,** Reinhard **Willinger**
Institute of Energy Systems and Thermodynamics, TU Wien, Vienna, Austria.

#91 11:45 - 12:05

¬ Experimental and numerical investigations of nozzle spacing effects on flow characteristics of triple rectangular free jets

Koichi **Hayashida**[1], Takahiro **Kiwata**[2], Peter **Oshkai**[3]

1 Graduate School of Natural Science and Technology, Kanazawa University, Kakuma-machi, Kanazawa-shi, Ishikawa, Japan.

2 School of Mechanical Engineering, Kanazawa University, Kakuma-machi, Kanazawa-shi, Ishikawa, Japan.

3 Department of Mechanical Engineering, University of Victoria, Victoria, BC Canada

Session Identifier **TH** **Venice Room**
Session Main Topic **Combustion and Thermal Analysis**
Chairperson **Prof. László Fuchs**
Department of Mechanics, KTH, Royal Institute of Technology, Stockholm, Sweden.

Number of presentations 6 Thursday 28. August 10:25 - 12:25

#3 10:25 - 10:45

¬ Hazard prediction models for battery module and packs: Flammability, particle ignited vent gas, arcing without and with particles

Thirumalesha **Chittipotula,** Lucas **Eder,** David **Schellander**
AVL List GmbH, Graz, Austria.

#51 10:45 - 11:05

¬ Combustion- and pollutant-modelling of dimethyl ether in a swirl-stabilized cold air burner

Moritz **Diewald,** Leona **Göhler,** Nico **Schmitz,** Christian **Wuppermann**
Department for Industrial Furnaces and Heat Engineering, RWTH Aachen University, Aachen, Germany.

#54 11:05 - 11:25

¬ Effects of wall slip on large-scale flow in turbulent Rayleigh–Bénard convection

Sai Ravi Gupta **Polasanapalli[1,2],** Marten **Klein[1,2],** Heiko **Schmidt[1,2]**
1 Chair of Numerical Fluid and Gas Dynamics, Faculty of Mechanical Engineering, Electrical and Energy Systems, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany.
2 Scientific Computing Lab, Energy Innovation Center, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany.

#63 11:25 - 11:45

¬ Numerical investigation of a lifted methane/air jet flame using stochastic map-based turbulence modeling

Tommy **Starick[1],** Heiko **Schmidt[1,2]**
1 Chair of Numerical Fluid and Gas Dynamics, Institute of Transport Technology, Brandenburg University of Technology (BTU) Cottbus-Senftenberg, Cottbus, Germany.
2 Scientific Computing Lab (SCL), Energy Innovation Center (EIZ), Brandenburg University of Technology (BTU) Cottbus-Senftenberg, Cottbus, Germany.

#37 11:45 - 12:05

¬ CFD modelling of the thermo- and hydrodynamic capabilities of long-necked plesiosaurs (Reptilia, Sauropterygia)

Miguel **Marx**[2]**,** Róbert-Zoltán **Szász**[1]**,** Johan **Lindgren**[2]

1 Department of Energy Sciences, Lund University, Lund, Sweden.

2 Department of Geology, Lund University, Lund, Sweden.

#38 12:05 - 12:25

¬ A 0D-3D model for the analysis of the transient thermal behaviors of an electric power train

Alessio **Suman,** Riccardo **Bondesan,** Luca **Condotta,** Lorenzo **Antonioli,** Nicola **Zanini,** Mattia **Battarra,** Emiliano **Mucchi,** Mattia **Piovan,** Michele **Pinelli**

Department of Engineering, University of Ferrara, Ferrara, Italy.

Session Identifier	**Plenary 4**	**Shakespeare Room**
Session Main Topic	**Plenary Session**	
Invited Speaker	**Prof. Frank Nicoud** Institut Montpeliérain Alexander Grothendieck, University of Montpellier, CNRS, Montpellier, France Institut Universitaire de France, Paris, France.	
Chairperson	**Prof. Dominique Thévenin** Laboratory of Fluid Dynamics and Technical Flows, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.	

Number of presentations 1 Thursday 28. August 13:55 - 14:40

#118 13:55 - 14:40

¬ Macroscopic and microscopic blood flows

Franck **Nicoud**[1,3], Salomé **Bru**[1], Pierre **Pottier**[1,2], Pierre **Taraconat**[2], Simon **Mendez**[1]

1 Institut Montpeliérain Alexander Grothendieck, University of Montpellier, CNRS, Montpellier, France.

2 HORIBA Medical, Grabels, France.

3 Institut Universitaire de France, Paris, France.

Session Identifier **IF2** **Juliet Room**
Session Main Topic **Internal and External Flows**
Chairperson **Prof. Michael Fairweather**
School of Chemical and Process Engineering,
Faculty of Engineering and Physical Sciences, University of Leeds,
Leeds, United Kingdom.

Number of presentations 7 Thursday 28. August 15:10 - 17:30

#10 15:10 - 15:30

¬ Mobile separation of complex oil-water mixtures with an adapted Pitot pump

Jessica **Dafis**[1], Xuemei **Zhang**[2], Katharina **Zähringer**[1]

1 Laboratory of Fluid Dynamics and Technical Flows, Otto von Guericke University Magdeburg, Magdeburg, Germany.

2 State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an, China.

#11 15:30 - 15:50

¬ Predictions of particle trajectory response to Reynolds number in turbulent channel flows using artificial neural networks

Lee **Mortimer**, Michael **Fairweather**

School of Chemical and Process Engineering, Faculty of Engineering and Physical Sciences, University of Leeds, Leeds, United Kingdom.

#68 15:50 - 16:10

¬ Numerical model development and analysis of a drop-on-demand inkjet application

Patrick **Wagner**[1], Aurélia **Vallier**[2], Hesameddin **Fatehi**[3]

1 Sustainable Energy Engineering Program, Lund University, Lund, Sweden.

2 Tetra Pak Packaging Solutions AB, Lund, Sweden.

3 Department of Energy Sciences, Division of Fluid Mechanics, Lund University, Lund, Sweden.

#69 16:10 - 16:30

¬ A novel Eulerian-Lagrangian multi-scale method for cavitating flow in an injector nozzle

Wei **Guan**[1], Shengnan **Zhang**[2], Chuqiao **Wang**[3], Zhixia **He**[2],
Dominique **Thévenin**[1]

1 Lab. of Fluid Dynamics and Technical Flows, University of Magdeburg "Otto von Guericke", Magdeburg, Germany.

2 Institute for Energy Research, Jiangsu University, Zhenjiang, PR China.

3 School of Energy and Power Engineering, Jiangsu University, Zhenjiang, PR China.

#25 16:30 - 16:50

¬ Direct numerical simulation of the jet atomization process of shear thinning gel fuel

Kangbo **Yang,** Yuqi **Huang,** Weijuan **Yang,** Shuai **Wang,** Haiou **Wang,** Jianren **Fan**

Department of Energy Engineering, Zhejiang University, Hangzhou, China.

#22 16:50 - 17:10

¬ Dynamics and collision of non-spherical ellipsoid particles in turbulent channel flow

Connor **Nolan**[1], Lee **Mortimer**[2], Peter **Jimack**[3], Michael **Fairweather**[2]

1 EPSRC Centre for Doctoral Training in Future Fluid Dynamics, Faculty of Engineering and Physical Sciences, University of Leeds, Leeds, United Kingdom.

2 School of Chemical and Process Engineering, Faculty of Engineering and Physical Sciences, University of Leeds, Leeds, United Kingdom.

3 School of Computer Science, Faculty of Engineering and Physical Sciences, University of Leeds, Leeds, United Kingdom.

#43 17:10 - 17:30

¬ Gas accumulation behavior in diverging channels with grooves and bars of varying sizes

Michael **Mansour**[1,2], Mena **Shenouda**[2], Nicola **Zanini**[3], Dominique **Thévenin**[2],

1 Mechanical Power Engineering Department, Faculty of Engineering - Mataria, Helwan University, Cairo, Egypt.

2 Lab. of Fluid Dynamics & Technical Flows, University of Magdeburg "Otto von Guericke", Magdeburg, Germany.

3 Department of Engineering - University of Ferrara, Ferrara, Italy.

Session Identifier **BM1** **Shakespeare Room**
Session Main Topic **Biomedical Flows**
Chairperson **Prof. Gábor Janiga**
Laboratory of Fluid Dynamics and Technical Flows,
Otto von Guericke University Magdeburg, Magdeburg, Germany.

Number of presentations 7 Thursday 28. August 15:10 - 17:30

#66 15:10 - 15:30

¬ Evaluating the probability of infection in a UK hospice through a CFD driven metric

Mohammad **Elsarraj,** Yasser **Larimi,** Amir **Keshmiri**

Department of Fluids & Environment, School of Engineering, The University of Manchester, Manchester, UK.

#75 15:30 - 15:50

¬ Fluid mechanics of cerebral thrombi

László **Fuchs,** Lisa **Prahl-Wittberg**

1 Department of Mechanics, KTH, Royal Institute of Technology, Stockholm, Sweden.

#76 15:50 - 16:10

¬ Modelling the transport of oxygen in the human vascular system

Márta **Viharos,** Richárd **Wéber,** György **Paál**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#77 16:10 - 16:30

¬ Modelling the metabolic and myogenic control in human blood circulation

Richárd **Wéber,** Márta **Viharos,** György **Paál**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#80 16:30 - 16:50

¬ Superposition of secondary flows inside artificial geometries

Péter **Friedrich,** Benjamin **Csippa,** György **Paál**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#46 16:50 - 17:10

¬ Modeling of face mask flow and droplet filtration

Shijie **Xu**[1], Leilei **Xu**[1], Róbert Z. **Szász**[1], Xue-Song **Bai**[1], I.A.Sofia **Larsson**[2], Per **Gren**[2], Mikael **Sjödahl**[2], Joel **Wahl**[2], Mihai **Mihaescu**[3], Marco **Laudato**[3], Dario **Maggiolo**[4], Srdjan **Sasic**[4], **T.** Staffan **Lundström**[2]

1 Department of Energy Sciences, Lund University, Lund, Sweden.

2 Luleå University of Technology, Sweden.

3 KTH Royal Institute of Technology, Stockholm, Department of Engineering Mechanics, FLOW Research Center, Sweden.

4 Department of Mechanics and Maritime Sciences, Chalmers University of Technology, Gothenburg, Sweden.

#34 17:10 - 17:30

¬ A thrombosis model for blood-contacting medical devices

Yuning **Lin,** Shuai **Wang,** Jianren **Fan**

State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou, China.

Session Identifier **TM2** **Venice Room**
Session Main Topic **Turbomachinery**
Chairperson **Prof. Reinhard Willinger**
Institute of Energy Systems and Thermodynamics, TU Wien, Vienna, Austria.

Number of presentations 7 Thursday 28. August 15:10 - 17:30

#57 15:10 - 15:30

¬ LES and DES of flow and ice accretion on wind turbine blades

Johan **Revstedt**[1], Robert **Szász**[1], Stefan **Ivanell**[2]

1 Department of Energy Sciences, Faculty of Engineering, Lund University, Lund, Sweden.

2 Department of Earth Sciences, Uppsala University, Uppsala, Sweden.

#33 15:30 - 15:50

¬ Development of a cylindrical-blade wind turbine driven by a necklace vortex

Tsutomu **Takahashi**[1], Ryuga **Sadaoka**[2], Yasunori **Sato**[1]

1 Department of Mechanical Mechanics, Faculty of Engineering, Nagaoka University of Technology, Nagaoka, Japan.

2 Department of Mechanical Mechanics, Graduate School of Nagaoka University of Technology, Nagaoka, Japan.

#14 15:50 - 16:10

¬ A CFD study on the effect of deformable blades on centrifugal pump performance

Csaba **Hős**, Balázs **Erdősi**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#83 16:10 - 16:30

¬ Design and development of an automatic pump test rig for condition monitoring of mechanical seals

David **Heel**[1], Peter **Meusburger**[1], Helmut **Benigni**[1], Johannes **Bauer**[2], Ferdinand **Werdecker**[2], Maximilian **Raith**[2]

1 Institute for Hydraulic Fluid Machinery, Graz University of Technology, Graz, Austria.

2 EagleBurgmann Germany, Wolfratshausen, Germany.

#45 16:30 - 16:50

¬ Numerical analysis of the decelerated swirling flow regimes obtained by using a magnetorheological control device

Raul Alexandru **Szakal**[1], Alin Ilie **Bosioc**[2], Sebastian **Muntean**[1]

1 Center for Advanced Research in Engineering Sciences, Romanian Academy- Timisoara Branch, Timisoara, Romania.

2 University Politehnica Timisoara, Mechanical Engineering Faculty, Timisoara, Romania.

#28 16:50 - 17:10

¬ Efficient radial-axial jet for improving the flexibility in operation of hydraulic turbines

Ilie Alin **Bosioc**[1], Constantin **Tanasa**[2], Adrian **Stuparu**[1], Romeo **Susan-Resiga**[1]

1 Department of Mechanical Machines, Equipment and Transportation, Politehnica University Timișoara, Timișoara, Romania.

2 Research Institute for Renewable Energies, Politehnica University Timisoara, Timișoara, Romania.

#85 17:10 - 17:30

¬ Simulation and challenges for a low specific speed Pelton turbine

Daniel R. **Reiterer**, Lukas **Sandmaier**, Helmut **Benigni**

Institute of Hydraulic Fluid Machinery, Graz University of Technology, Graz, Austria.

Session Identifier **NN** **Juliet Room**
Session Main Topic **Non-Newtonian and Multiphase Flows**
Chairperson **Prof. Shuichi Iwata**
Department of Life-Science and Applied Chemistry,
Graduate School of Engineering, Nagoya Institute of Technology,
Gokiso-cho, Showa-ku, Nagoya, Aichi, Japan.

Number of presentations 6 Friday 29. August 9:00 - 11:20

#26 9:00 - 9:20

¬ Molecular dynamics simulation of the rheological behaviour of gel fuels

Mengfan **Si,** Shuai **Wang,** Haiou **Wang,** Kun **Luo,** Jianren **Fan**

State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou, China.

#36 9:20 - 9:40

¬ Minimizing sedimentation in round wastewater pumping stations with the assistance of physical models

Tim **Nitzsche**[1]**,** Horst **Baxpehler**[2]**,** Paul Uwe **Thamsen**[1]

1 Chair of Fluid System Dynamics, Faculty of Mechanical Engineering and Transport Systems, Technische Universität Berlin, Berlin, Germany.
2 Sewer operation, Erftverband, Bergheim, Germany.

#86 9:40 - 10:00

¬ Application ranges of the Hagen-Poiseuille law to model non-Newtonian fluid-filled dampers

Boglárka **Balog,** Péter **Nagy-György**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering,
Budapest University of Technology and Economics, Budapest, Hungary.

#78 10:00 - 10:20

¬ Mulitphase model of the melt blowing process in multi-hole nozzles

Fabian **Lemarchand**[1]**,** Alejandro **Rivas**[1]**,** Alaine **Salterain**[2]

1 Department of Mechanical Engineering and Materials, TECNUN Escuela de Ingeniería, Universidad de Navarra, San Sebastian, Spain.
2 Valco Melton, Orcoyen, Spain.

#23 10:40 - 11:00

¬ Exploring transient instationarities of mechanical load in the operation of wastewater pumps

Florian **Brokhausen,** Paul Uwe **Thamsen**

Chair of Fluid System Dynamics, Faculty of Mechanical Engineering and Transport Systems, Technische Universität Berlin, Berlin, Germany.

#24 11:00 - 11:10

¬ The effect of housing recess geometry on fiber entry into the back shroud cavity of a wastewater pump

Tobias **Rinnert,** Paul Uwe **Thamsen**

Department of Fluid System Dynamics, Faculty of Mechanical Engineering and Transport Systems, Technische Universität Berlin, Berlin, Germany.

Session Identifier **BM2** **Shakespeare Room**
Session Main Topic **Biomedical Flows**
Chairperson **Dr. Francesco Romanò**
Univ. Lille, CNRS, ONERA, Arts et Métiers Institute of Technology, Centrale Lille, Laboratoire de Mécanique des Fluides de Lille - Kampé de Fériet, Lille, France.

Number of presentations 7 Friday 29. August 9:00 - 11:20

#62 9:00 - 9:20

¬ Flow diverter treatment for intracranial media bifurcation aneurysms: Challenging the predictive role of morphology and hemodynamics

Anna **Bernovskis**[1,5], Janneck **Stahl**[1,5], Gabor **Janiga**[2,5], Matthias **Gawlitza**[3], Daniel **Behme**[4,5], Philipp **Berg**[1,5], Samuel **Voß**[2,5]

1 Department of Healthcare Telematics and Medical Engineering, University of Magdeburg, Magdeburg, Germany.
2 Laboratory of Fluid Dynamics and Technical Flows, University of Magdeburg, Magdeburg, Germany.
3 Department of Neuroradiology, University Clinic Jena, Jena, Germany.
4 Department of Neuroradiology, University Hospital of Magdeburg, Magdeburg, Germany.
5 Forschungscampus STIMULATE, University of Magdeburg, Magdeburg, Germany.

#55 9:20 - 9:40

¬ Numerical investigation on the influence of internal carotid artery geometry on wall shear stress distribution

Jianqing **Feng**[1], Yanbo **Liang**[1], Yan **Chen**[2], Marie **Oshima**[2]

1 Department of Mechanical Engineering, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan.
2 Interfaculty Initiative in Information Studies, The University of Tokyo, Tokyo, Japan.

#64 9:40 - 10:00

¬ Numerical investigation of liquid embolization for intravascular treatment using a particle method

Marie **Oshima**[1], Takuya **Natume**[2], Nobuhiko **Mukai**[2]

1 Interfaculty Initiative in Information Studies/ Institute of Industrial Science, the University of Tokyo, Tokyo, Japan.
2 Graduate School of Integrative Science and Engineering, Tokyo City University, Tokyo, Japan.

#20 10:00 - 10:20

¬ A CFD study on deposition efficiency in case of inhaled aerosol medication

Péter **Sáfrány,** Csaba **Hős**

Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#53 10:20 - 10:40

¬ Development of a cerebral peripheral vasculature model for quantitative assessment of collateral blood flow using SPECT and 4D flow MRI

Chi Hang **To**[1]**,** Shigeki **Yamada**[2]**,** Marie **Oshima**[3]

1 Graduate School of Engineering, Department of Mechanical Engineering, University of Tokyo, Tokyo, Japan.

2 Graduate School of Medical Sciences, Department of Neurosurgery, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan.

3 Institute of Industrial Science / Graduate School of Interdisciplinary Information Studies, The University of Tokyo, Tokyo, Japan.

#87 10:40 - 11:00

¬ Evaluation of carotid plaque morphometry and hemodynamics

Benjamin **Csippa**[1]**,** Márton **Németh**[1]**,** György **Paál**[1]**,** Zsuzsanna **Mihály**[2]

1 Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

2 Department of Vascular Surgery, Heart and Vascular centre, Faculty of Medicine, Semmelweis University, Budapest, Hungary.

#42 11:00 - 11:20

¬ A novel SPH model for thrombus formation

Sumanta **Laha**[1,2]**,** Georgios **Fourtakas**[1]**,** Prasanta K. **Das**[2]**,** Amir **Kesmiri**[1,3]

1 School of Engineering, The University of Manchester, Manchester, United Kingdom.

2 Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, India.

3 Manchester University NHS Foundation Trust, Manchester, Manchester, United Kingdom.

Session Identifier	**WS5**	**Venice Room**
Title	**Atmospheric Flows Workshop: Uncertainty Analysis from Measurements to Model Interpretation**	
WS Leader	**Dr. Tamás Weidinger** Department of Meteorology, Institute of Geography and Earth Sciences, Faculty of Sciences, Eötvös Loránd University, Budapest, Hungary.	

Number of presentations 6 Friday 29. August 9:00 - 10:40

¬ ABSTRACT

The process of knowledge acquisition spans from measurements through data processing to modeling and the interpretation of results. Each stage of this process is subject to uncertainties and errors. This is true for problems in fluid dynamics as well as for meteorological, hydrological, and climate predictions. Various models — be they weather, climate, hydrological, or flow solvers — share a number of common methodological elements and solutions. These include the construction of initial and boundary conditions, the use of measurements and large-scale model outputs (i.e., model initialization), and the optimization of model parameterizations (e.g., cloud and precipitation formation, turbulent diffusion). The identification of uncertainty sources and the assessment of their impact also require similar types of analysis. This is especially relevant when interpreting results from an engineering perspective, understanding outputs of meteorological and climate models, or preparing forecasts for renewable energy production (such as wind and solar power). The aim of the workshop is to identify and quantify sources of uncertainty, taking into account the specific characteristics of the various disciplines.

9:00 - 9:20

¬ Diagnosing atmospheric balances in machine learning weather prediction

Ádám **Leelőssy,** András **Csontos**

ELTE, Institute of Geography and Earth Sciences, Department of Meteorology, Budapest, Hungary.

9:20 - 9:40

¬ Testing the Stochastically Perturbed Parameterizations in the regional ensemble weather prediction system of HungaroMet

Zsófia **Szalkai**

HungaroMet, Hungarian Meteorological Service, Directorate for Climate, Research and Development, Budapest, Hungary.

9:40 - 10:00

¬ Uncertainty about the ice crystal concentration in clouds, where models and measurements diverge

Noémi **Sarkadi,** István **Geresdi**

University of Pécs, Institute of Geography and Earth Sciences, Department of Geology and Meteorology, Pécs, Hungary

¬ Machine learning-based solar irradiance nowcasting system development at HungaroMet

Soma **Oláh**

HungaroMet, Hungarian Meteorological Service, Directorate for Climate, Research and Development, Budapest, Hungary.

10:00 - 10:20

¬ Uncertainty quantification and feature importance in image-feature-based solar irradiation nowcasting

Lilla **Barancsuk,** Veronika **Groma**

HUN-REN Centre for Energy Research, Budapest, Hungary.

10:20 - 10:40

¬ The effect of global warming on the photovoltaic potential in East-Central Europe based on GCM simulations

Erzsébet **Kristóf**[1]**,** Tímea **Kalmár**[1,2]

1 ELTE, Institute of Geography and Earth Sciences, Department of Meteorology, Budapest, Hungary.

2 Institute of Atmospheric Physics of the Czech Academy of Sciences, Department of Climatology, Prague, Czech Republic.

Session Identifier **BU** **Juliet Room**
Session Main Topic **Cavitation and Bubbles**
Chairperson **Dr. Katharina Zähringer**
Laboratory of Fluid Dynamics and Technical Flows,
Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.

Number of presentations 6 Friday 29. August 11:50 - 13:50

#12 11:50 - 12:10

¬ Enhancing predictive accuracy of turbulent subcooled flow boiling using LES

Hanan **Aburema**[1], Bruce C. **Hanson**[1], Michael **Fairweather**[1], Marco **Colombo**[2]

1 School of Chemical & Process Engineering, University of Leeds, Leeds, UK.
2 School of Mechanical, Aerospace & Civil Engineering, University of Sheffield, Sheffield, UK.

#72 12:10 - 12:30

¬ BEM simulation of an expanding / contracting bubble in viscoelastic fluids

Koki **Asano**[1], Honami **Nishimura**[1], Haruki **Furukawa**[1], Tim **Phillips**[2], Steven **Lind**[2], Shuichi **Iwata**[1]

1 Department of Life-Science and Applied Chemistry, Graduate School of Engineering, Nagoya Institute of Technology, Gokiso-cho, Showa-ku, Nagoya, Aichi, Japan.
2 School of Mathematics, Cardiff University, Cardiff, United Kingdom.

#74 12:30 - 12:50

¬ Spherical stability and breakup limit of oscillating microbubbles

Dániel **Nagy**, Péter **Kalmár**, Kálmán **Klapcsik**, Ferenc **Hegedűs**
Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.

#79 12:50 - 13:10

¬ Cavitation bubble near a wall: Sensitivity to modeling conditions

Bo **Wang**, Zhidian **Yang**, Francesco **Romanò**
Univ. Lille, CNRS, ONERA, Arts et Métiers Institute of Technology, Centrale Lille, Laboratoire de Mécanique des Fluides de Lille - Kampé de Fériet, Lille, France.

#73 13:10 - 13:30

A comprehensive analysis of variable inlet guide vane on cavitation and hydraulic performance of an axial-flow pump

Duc-Anh **Nguyen**[1,2], Jin-Hyuk **Kim**[1,2]

1 Convergence Manufacturing System Engineering (Green Process and Energy System Engineering), University of Science & Technology, Daejeon, South Korea.

2 Carbon Neutral Technology R&D Department, Korea Institute of Industrial Technology, Cheonan, South Korea.

#17 13:30 - 13:50

The effect of bubble parameters on the mixing in a bubble column with counter current liquid flow

Péter **Kováts,** Katharina **Zähringer**

Laboratory of Fluid Dynamics and Technical Flows, Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany.

Session Identifier	**WS6**	**Shakespeare Room**
Title	**Advances in Biomedical Flows Workshop**	
WS Leader	**Dr. Benjamin Csippa** Department of Hydrodynamic Systems, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.	

Friday 29. August 11:50 - 13:50

¬ ABSTRACT

Advances in Biomedical Flows is a workshop designed to present recent developments in computational and experimental studies related to physiological fluid mechanics. The main topics include numerical modeling of intracranial aneurysm treatments, analysis of flow diverter performance based on in-vitro measurements, and characterization of chaotic flow behavior within aneurysms. Additionally, the workshop will address reduced-order modeling techniques applied to gas exchange processes in lung alveoli. Discussions will emphasize practical methodologies, validation approaches, and their implications for clinical applications. The workshop aims to facilitate collaboration between computational scientists, experimental researchers, and medical practitioners, highlighting challenges and future directions for translating fluid mechanics research into clinical practice.

Session Identifier	**WS7**	**Venice Room**
Title	**Atmospheric Flows Workshop: Uncertainty Analysis from Measurements to Model Interpretation**	
WS Leader	**Prof. Gergely Kristóf** Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary.	

Number of presentations 6 Friday 29. August 11:50 - 13:50

¬ ABSTRACT

The process of knowledge acquisition spans from measurements through data processing to modeling and the interpretation of results. Each stage of this process is subject to uncertainties and errors. This is true for problems in fluid dynamics as well as for meteorological, hydrological, and climate predictions. Various models — be they weather, climate, hydrological, or flow solvers — share a number of common methodological elements and solutions. These include the construction of initial and boundary conditions, the use of measurements and large-scale model outputs (i.e., model initialization), and the optimization of model parameterizations (e.g., cloud and precipitation formation, turbulent diffusion). The identification of uncertainty sources and the assessment of their impact also require similar types of analysis. This is especially relevant when interpreting results from an engineering perspective, understanding outputs of meteorological and climate models, or preparing forecasts for renewable energy production (such as wind and solar power). The aim of the workshop is to identify and quantify sources of uncertainty, taking into account the specific characteristics of the various disciplines.

11:50 - 12:10

¬ Sensitivity studies for reduction of the summer heat stress in Budapest

Gabriella **Szépszó,** Gabriella **Allaga-Zsebeházi**

HungaroMet, Hungarian Meteorological Service, Directorate for Climate, Research and Development, Budapest, Hungary

12:10 - 12:30

¬ Learned upper boundary windshear conditions for Large Eddy Simulation

Márton **Koren,** Gergely **Kristóf**

BME, Faculty of Mechanical Engineering, Department of Fluid Mechanics, Budapest, Hungary.

12:10 - 12:30

¬ Non-hydrostatic atmospheric simulations in OpenFOAM

Miklós **Balogh**

BME, Faculty of Mechanical Engineering, Department of Fluid Mechanics, Budapest, Hungary

12:30 - 12:50

¬ Inorganic and Analytical Chemistry, Budapest, Hungary. Sudden flips in the circulation field of a geothermal crater lake (Lake Hévíz)

Péter **Torma[1,2],** Dénes **Szieberth[3],** Reska **Zsombor[1],** Gabriella **Lükő[1]**

1 BME, Faculty of Civil Engineering, Department of Hydraulic and Water Resources Engineering, National Laboratory for Water Science and Water Security, Budapest, Hungary.
2 HUN-REN–SZTE Research Group for Photoacoustic Monitoring of Environmental Processes, Szeged, Hungary.
3 BME, Faculty of Chemical Technology and Biotechnology, Department of

12:50 - 13:10

¬ Handbook within the framework of the COST-FAIRNESS Program – Etzinger, J. Foken, Th., Lalic, B., Weidinger, T. (eds:) Micrometeorological Measurements – An Introduction for Beginners, Springer (STEGE)

Tamás **Weidinger,**

ELTE, Institute of Geography and Earth Sciences, Department of Meteorology, Budapest, Hungary.

13:10 - 13:30

¬ Mobile air quality monitoring: Challenges and uncertainties in urban-scale measurements

Ágoston Vilmos **Tordai,** Róbert **Mészáros**

ELTE, Institute of Geography and Earth Sciences, Department of Meteorology, Budapest, Hungary.

The Organizing Committee of CMFF'25
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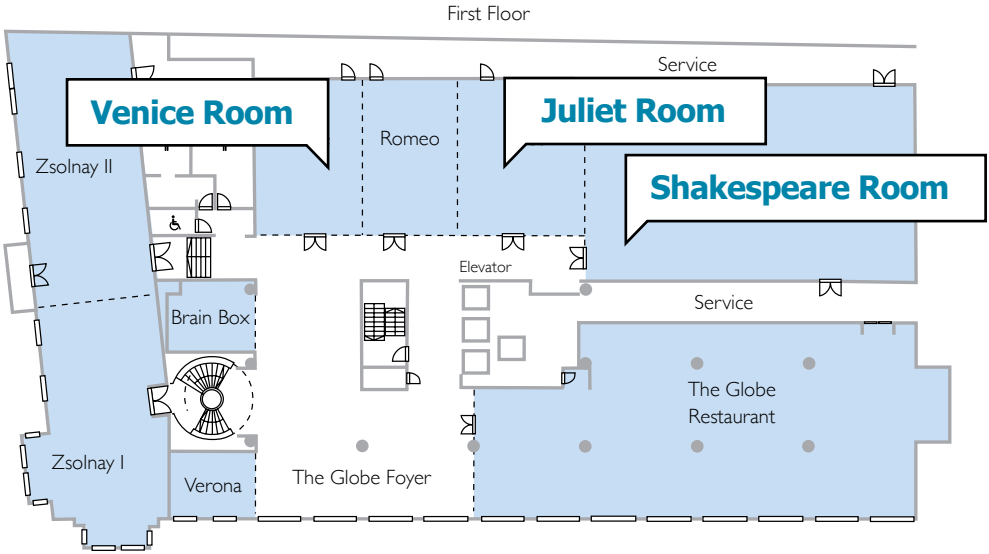
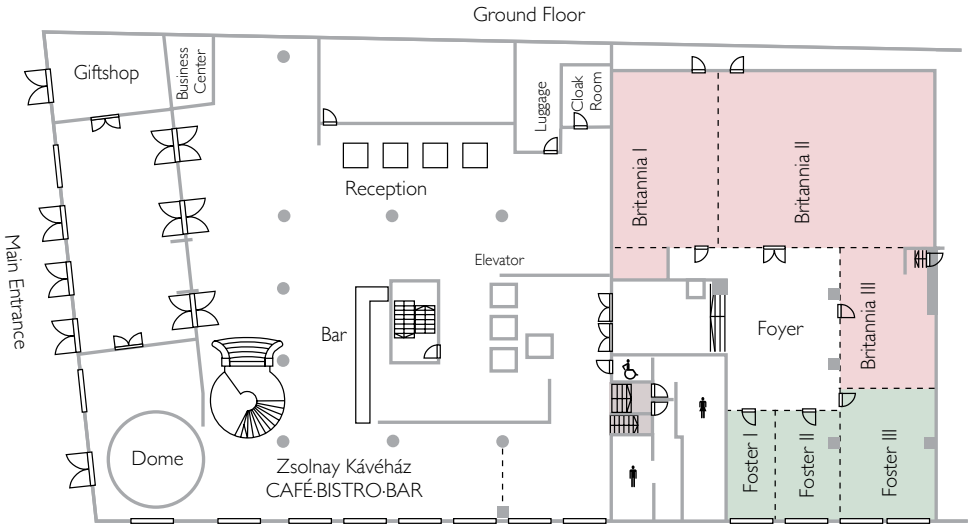
Lecture room locations at Radisson Blu Béke Hotel





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