2024 FMC

10-13 September 2024
Warsaw, Poland

VENUE:
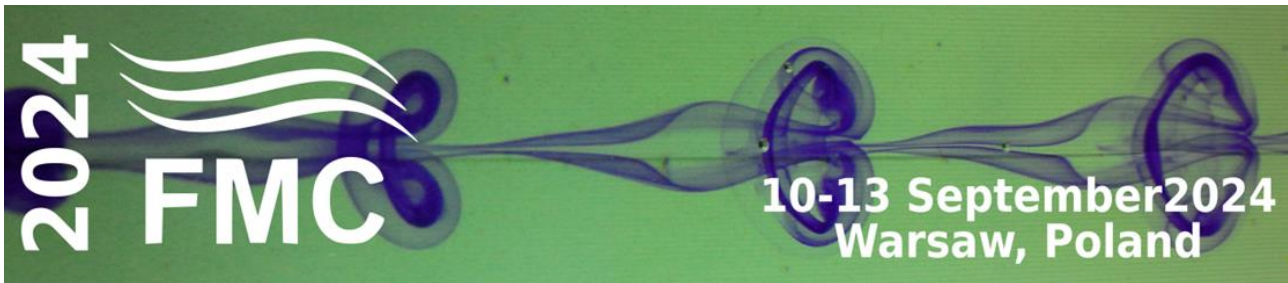**Warsaw University of Technology**
Building Rektorska 4

	Tuesday September 10th, 2024
from 10.00	Registration **LOBBY**
11.00-11.45	XXVI FMC Opening Ceremony **Room 1.01 Syriusz**
11.45-12.30	**Prof. J.M. Floryan** Western University, London, Ontario, Canada **On the structured convection** *Chairman: Prof. J. Szumbarski* **Room 1.01 Syriusz**
12.30-14.00	Lunch
14.00-17.00	**Young researchers W. Elsner's competition** *Chairman: Prof. J.M. Floryan* **Room 1.01 Syriusz**
17:00-17:30	Coffee break
17:30-18:15	Poster teasers session *Chairman: Dr. T. Bobiński* **LOBBY**
18:15-19:00	Young researchers W. Elsner's jury **Room 1.01 Syriusz**
20.00-23.00	Get-together party **Patio in the Institute of Heat Engineering (IHE) Nowowiejska 21/25**
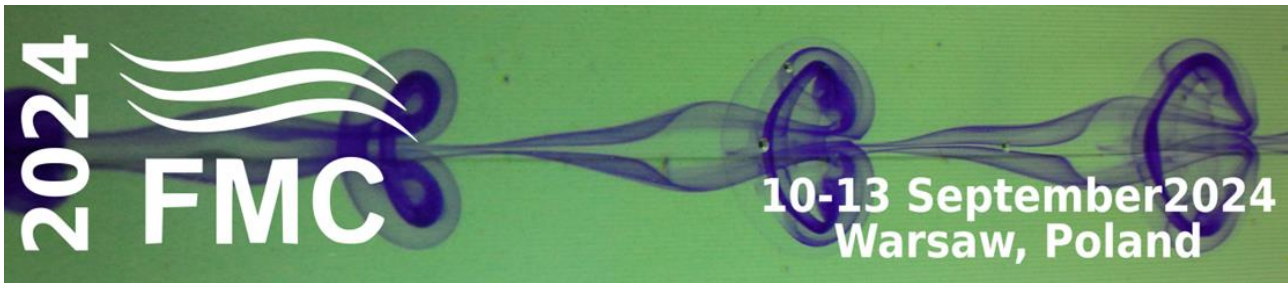
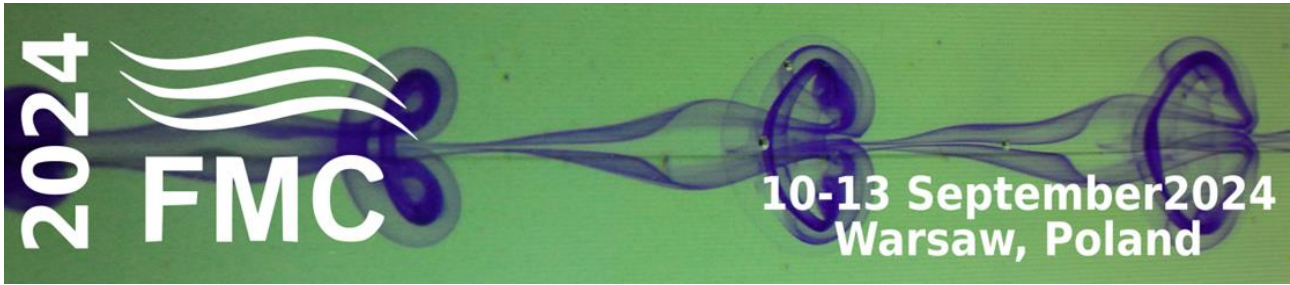|	Wednesday September 11th, 2024		
09.00-9.45	**Prof. G. Kawahara** Osaka University, Osaka, Japan **Ultimate states of turbulent thermal convection and shear flow** *Chairman: Prof. J. Pozorski* **Room 1.01 Syriusz**		
9.45-10.15	Coffee break		
10.15-12.15	Session #1 **Combustion and Reactive flows** *Chairman: Prof. W. Wróblewski* **Room 4.01 Polaris**	Session #2 Experimental Methods *Chairman: Prof. W. Elsner* **Room 4.04 Kapella**	Session #3 **Multiphase flows and Complex fluids** *Chairman: Prof. J. Pozorski* **Room 1.01 Syriusz**
12.15-13.45	Lunch		
13.45-14.30	**Prof. K.J. Fidkowski** University of Michigan, Michigan, USA **Output-based discretization error control in turbulent flow simulations** *Chairman: Prof. S. Kubacki* **Room 1.01 Syriusz**		
14.30-16.30	Session #4 **Computational Fluid Dynamics** *Chairman: Prof. S. Sherwin* **Room 4.01 Polaris**	Session #5 **Turbulence and Transition** *Chairman: Prof. G. Kawahara* **Room 4.04 Kapella**	Session #6 **Multiphase flows and complex fluids** *Chairman: Prof. Piotr Korczyk* **Room 1.01 Syriusz**
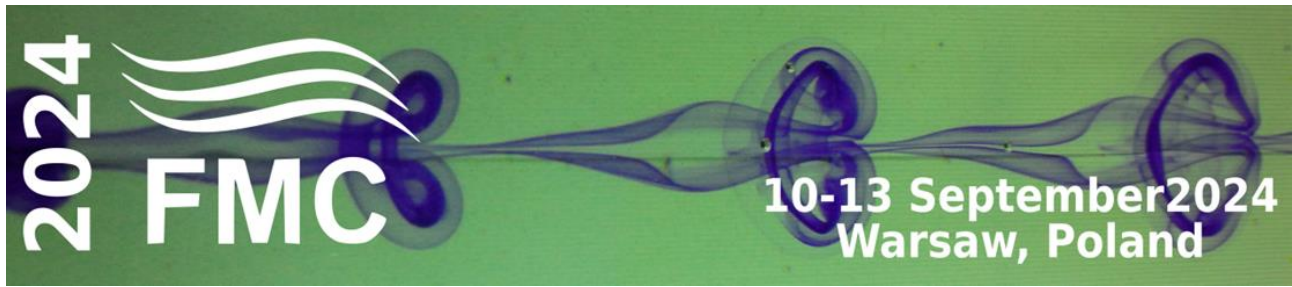
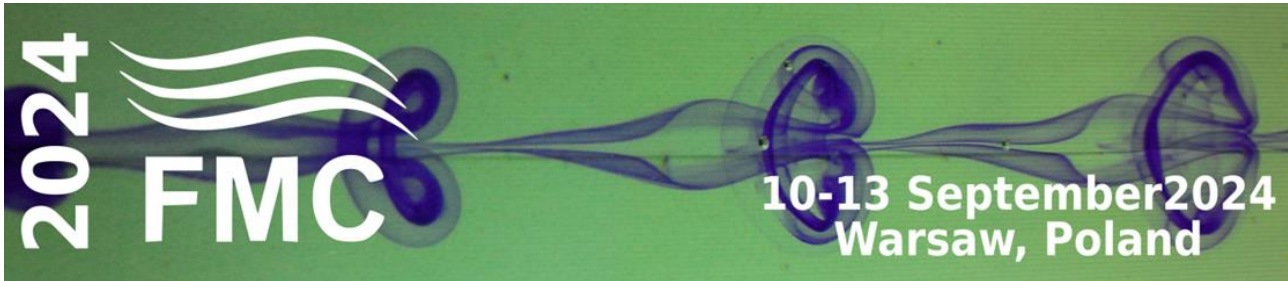| 16.30-18.00	Coffee break / Poster display

|	**Thursday September 12th, 2024**		
09.00-9.45	**Prof. S. Sherwin** Imperial College London, London, UK **Advancing spectral/hp element high fidelity simulation of incompressible and compressible flows** *Chairman: Prof. A. Tyliszczak* **Room 1.01 Syriusz**		
9.45-10.15	Coffee break		
10.15-12.15	Session #7 **Computational Fluid Dynamics** *Chairman: Prof. A. Tyliszczak* **Room 1.01 Syriusz**	Session #8 **Turbulence and Transition** *Chairman: Prof. J.M. Floryan* **Room 4.01 Polaris**	Session #9 **Aerodynamics** *Chairman: Prof. L.P. Ruiz-Calavera* **Room 4.04 Kapella**
12.15-13.45	Lunch		
13.45-14.30	**Prof. L.P. Ruiz-Calavera** Universidad Politécnica de Madrid / Airbus **Some aerodynamic challenges of the future sustainable commercial aircraft** *Chairman: Prof. P. Doerffer* **Room 1.01 Syriusz**		
14.30-16.30	**Sponsors' session** *Chairman: Prof. J. Szumbarski* **Room 1.01 Syriusz**		
16.30-18.00	Coffee break / Poster display		

20.00-23.00	Conference dinner in a restaurant

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	Friday **September 13th, 2024**		
09.00-9.45	**Prof. D. Simoni** University of Genova **The role of experiments and data reduction techniques in the tuning of different transition models** *Chairman: Prof. S. Malinowski* **Room 1.01 Syriusz**		
9.45-10.15	Coffee break		
10.15-12.15	Session #10 **Computational Fluid Dynamics** *Chairman: Prof. M. Marek* **Room 4.01 Polaris**	Session #11 **Flow Control and Optimization** *Chairman: Prof. K.J. Fidkowski* **Room 1.01 Syriusz**	Session #12 **Aerodynamics** *Chairman: Prof. D. Simoni* **Room 4.04 Kapella**
12.15-13.45	Lunch		
13.45-14.15	Closing of the Conference **Room 1.01 Syriusz**		
14.15-15.30	Meeting of the Fluid Mechanics Section of the Committee of Mechanics PAS **Room 4.07 Adara**		
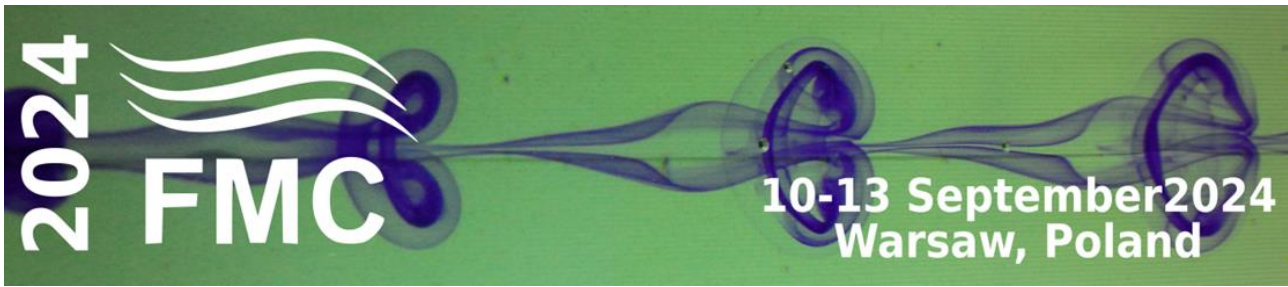
DETAILED SCHEDULE OF PRESENTATION SESSIONS

Young researchers W. Elsner's competition

*Tuesday, 14.00-17:00*
Room 1.01 Chairman: Prof. J.M. Floryan

14:00   Turbulent Coherent Structures in Thermal Vortex Rings.
P. Jędrejko, J.-I. Yano, M. Wacławczyk

14:25   Control of turbulent boundary layer separation using a sinusoidal-type wavy-wall
P Kamiński, A Tyliszczak.

14:50   Impact of flashing conditions on impinging-jet sprays.
B Kaźmierski, Ł Kapusta

15:15   Numerical investigation of local aerosol deposition in a real scale T-junction of a ventilation network.
R Ploix, J Malet, E Gehin

15:40   Evaluation of hot-wire measurement accuracy in turbulent boundary layers under strong adverse pressure gradient conditions.
M Romańczyk, A Dróżdż, W Elsner

16:05   Aeroacoustic analysis of propeller rotor noise in hover using the porous FW--H acoustic analogy.
T Suresh, O Szulc, P Flaszynski

16:30   Rectangular waveguide cavities as cloaks for cylindrical obstacles.
D Żyła, T Bobinski

Poster teasers session

Tuesday, 17.30-18.15
LOBBY Chairman: Dr T. Bobiński

1. Preliminary wind tunnel testing of a racing motorcycle using a scale model.
K Balcerzak, B Potęga

2. The CFD study of diesel injection techniques for a more environmentally friendly engine.
O Ghazal

3. Fluid Dynamics of Flow around Various Cylinders Geometries.
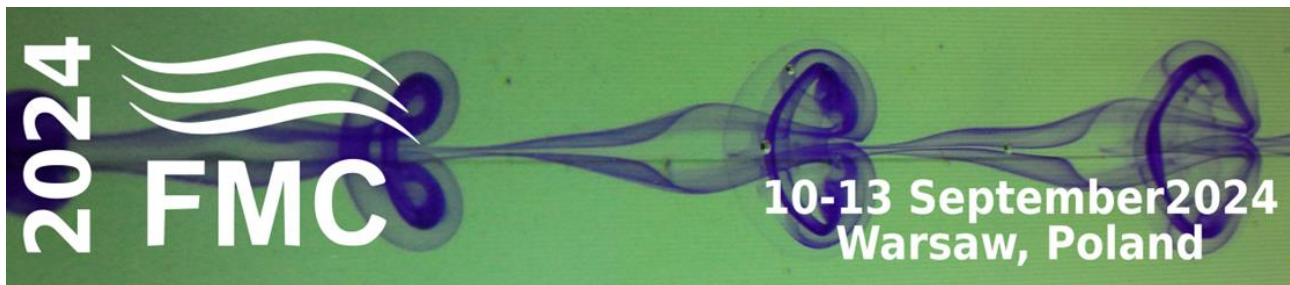*R Gnatowska, K Gumowski, P Niegodajew, K Gajewska*
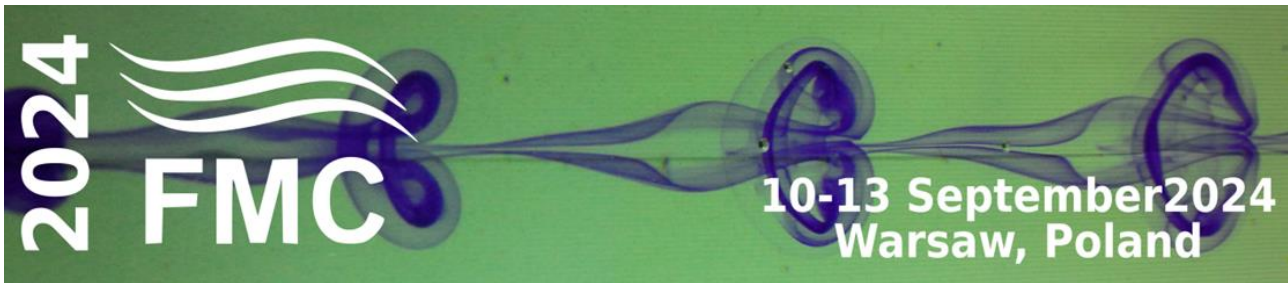
4. Numerical Investigation of Aerodynamic Uncertainties Caused by Turbulence Modeling for a Missile in Transonic Flow.
   S Kagan Durmus, N S Uzol

5. Multiphase flow analysis in horizontal pipe - numerical issues.
   P Marczak, M Jaszczur

6. Experimental analysis of fractal distributors.
   A Merdjani and N Kizilova

7. Extending Channelflow: Incorporating Temperature Effects in Poiseuille and Couette Flows.
   K Michałowski, S Gepner

8. Fractal-Type Structures for Heat Exchangers: A CFD Investigation of Tube Geometry Influence.
   A A Muhsen, N Kizilova, B H Attiya

9. Numerical Investigation of Gas Injection into the Crossflow for High Reynolds Number.
   S B Naqvi and M Matyka

10. Time dependence of similarity functions in the atmospheric boundary layer.
    J Nzotungishaka, M Waclawczyk and J-I Yano

11. Surrogate model of missile's flight control surface aerodynamics.
    B Olszański

12. Composition tracking of CO2-rich streams in large-scale pipeline networks under steady-state conditions.
    A Osiadacz, Ł Kotyński, F Uilhoorn, T Bleschke, M Kwestarz and M Chaczykowski

13. Optimisation of the design of Formula SAE car aerodynamics.
    T Polski, M Żyto, M Płatek Ł Rybakowski, M Bartoszek, G Spruch, R Szulejko, E Podlevski

14. A comparison of master-length scale hypotheses in the Mellor-Yamada model of atmospheric turbulence in stable conditions.
    P Porretta-Tomaszewska, L Łobocki

15. Kinetic modelling for hydrogenation of carbon dioxide over NiO/SiO2 catalyst.
    R Rakhi, F Mauss

16. Investigation of flow over grooved cylinder by 2D2C and volumetric PIV.
    W Styczniewicz

Session #1, **Combustion and Reactive flows**
Wednesday, 10.15-12.15

September 11th, 2024

Room 4.01

Chairman: Prof. W. Wróblewski

10.15 Investigation of steam-diluted hydrogen combustion in a counter-current nozzle configuration using LES.
A Wawrzak, A Tyliszczak

10.35 Swirl Effect Assessment on NOx Formation for CH4/H2/NH3 Flame under MILD Condition.
A Mardani, K C Kim

10.55 Revisiting homogeneous modeling with volume averaging theory: structured catalysts for steam reforming and CO2 methanation.
J A M Méndez, B Dorneanu, H Schmidt, H Arellano-García

11.15 A high-order LES of a flow in complex geometry.
K Wawrzak, A Wawrzak, A Bogusławski, A Tyliszczak

11.35 Numerical modelling of a rotary shock wave compression heat engine with a rotating detonation wave combustion chamber.
J Piechna, M Szudarek, A Piechna

11.55 Some theoretical problems of creation the mathematic model of joint treatment of wastewaters with organic contaminants and nitrogen compounds by method of biofiltration.
S Telyma, O Oliynyk *(online)*

Session #2, **Experimental Methods**

Wednesday, 10.15-12.15

September 11th, 2024

Room 4.04

Chairman: Prof. W. Elsner

10.15 Integrated Approaches in Microfluidic Design for Enhanced Droplet Manipulation and Biological Insights.
P Korczyk

10.35 Influence of micro- and mesoscale on the permeability characteristics of 3D printed porous objects.
K Bukowski, Ł Klotz

10.55 PIV measurement of model nuclear fuel rod bundle.
D Duda

11.15 Experimental Challenges of Nano and Microfluidics.
T Kowalewski
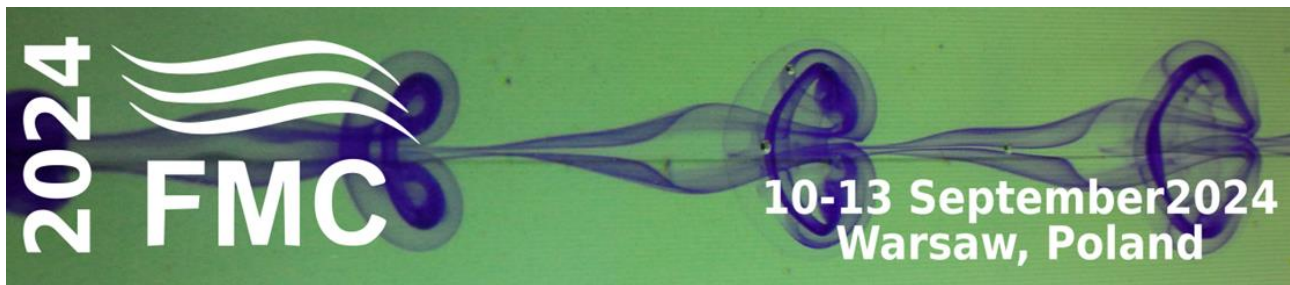
11.35   Mapping the efficiency of a novel rotating arc-wall inline mixer
         M Kiwan, E Younes, C Castelain, T Burghelea

Session #3, **Multiphase flows and Complex fluids**

Wednesday, 10.15-12.15

September 11th, 2024

Room 1.01

Chairman: Prof. J. Pozorski

10.15   Collision efficiency of cloud droplets considering electrostatic and hydrodynamic
         interactions.
         A Michel, B Rosa, A Ababaei

10.35   On improving the spatial resolution of the statistical model of the interphase region.
         T Wacławczyk

10.55   Interaction of liquid droplets with microstructured and nanostructured surfaces.
         N Kizilova

11.15   Impact of pipe inclination on fill height for partially filled pipes used in a custom slurry
         transport rig.
         A Bose

11.35   Droplet surfing on a boundary layer - origin of droplet shape oscillation.
         M Klamka, T Bobinski

11.55   Forces acting on a pendant drop on a small pillar.
         M Arogeti, A Vinod, M Tadmor

Session #4, **Computational Fluid Dynamics**

Wednesday, 14.30-16.30

September 11th, 2024

Room 4.01

Chairman: Prof. S. Sherwin

14.30   Isotropy of numerical errors in the context of implicit large eddy simulation.
         A Kajzer

14.50   Quantification of laminar mixing efficiency using 'strange eigenmodes' approach.
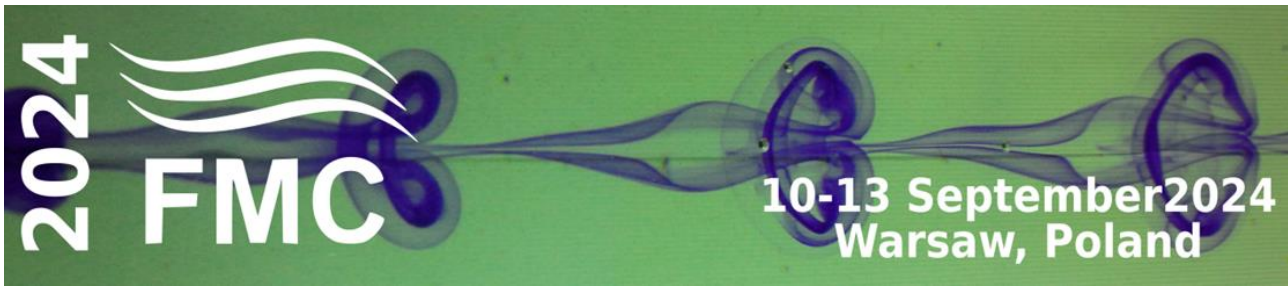   *J Fabisiak, S Gepner*

15.10   Heat transfer of laser-illuminated gold nanorod platforms distributed in a flow
         germicidal chamber.
         P Radomski

15.30   Numerical modelling of gas flow in random packed bed with a helical flow deflector.
         Mj Marek

15.50   Numerical simulation of two-phase flow in OpenFOAM software.
S Koval, N Dimitrieva (online)

Session #5, **Turbulence and Transition**
Wednesday, 14.30-16.30
September 11th, 2024
Room 4.04 Chairman: Prof. G. Kawahara

14.30   Turbulent cascades in the Atmospheric Boundary Layers.
M Wacławczyk, J L Nowak, J C Vassilicos, S Król, S P Malinowski

14.50   Atmospheric turbulence: anisotropic, nonstationary and intermittent. What can we do?
S Malinowski, M Wacławczyk, J Nowak, S Król, R Grosz

15.10   Influence of porous material on the flow behind backward-facing step - experimental study.
K Bukowski, K Gumowski, Ł Klotz

15.30   Replicating environmental flows with an active grid.
P Baj, P Czubak, B Załęcki, A Czaplińska

15.50   A shear flow in counter-rotating Taylor-Couette configuration.
E Tuliszka-Sznitko

16.10   Large Eddy Simulation of turbulent flow at the entrance to an annular pipe section.
P Prusiński, S Kubacki
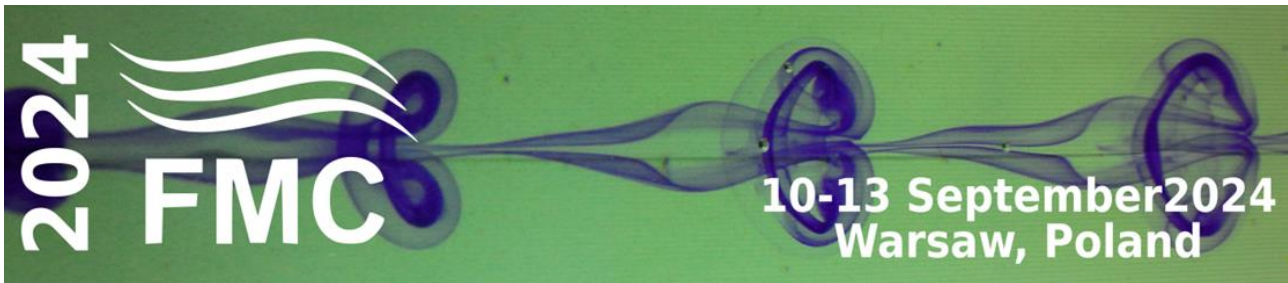
Session #6, **Multiphase flows and Complex fluids**
Wednesday, 14.30-16.30
September 11th, 2024
Room 1.01
Chairman: Prof. Piotr Korczyk

14.30   Particle clustering and velocity statistics in large-eddy simulations of isotropic turbulence.
M Rajek, J Pozorski

14.50   Estimation of Droplet size using Pressure Oscillation-based approach in Microfluidics by Simulations.
B Bakthar Khan

15.10   Utilizing a pressure-based CFD solver for modelling wet steam flow in low-pressure turbine stages: a predictive approach to assessing flow losses.
S Shabani, M Majkut, S Dykas, K Smolka

15.30 Numerical simulation of the oil-water flow in a horizontal pipe in a stratified flow regime.
D Asendrych

15.50 Liquid-gas flow modelling in horizontal pipe.
M Jaszczur, P Marczak, R Hanus, A Golijanek-Jędrzejczyk, A Andruszkiewicz, M Zych

16.10 Time-resolved imaging of reactive transport instability during multiphase flow in porous media.
M Dzikowski, P Szymczak

Session #7, **Computational Fluid Dynamics**

Thursday, 10.15-12.15

September 12th, 2024

Room 4.01

Chairman: Prof. A. Tyliszczak

10.15 Dissimilar heat transfer enhancement in pipe flow with deep axial grooves.
S Motoki, G Kawahara

10.35 Linear Stability of Compressible Flows in Open-Cavities with Curved Downstream Walls.
V Pezlar, K Dylewicz, V Theofilis

10.55 Numerical evaluation of mass diffusive compressible fluids flows models.
T Bodnar

11.15 Code coupling for the Tube Support Plate clogging in steam generators.
A Couvez, S Gyuran, N Leterrier, P Omnes, E Saikali

11.35 URANS numerical analysis of turbulence intensity influence on laminar separation bubble in the case of the NACA0018 airfoil.
J Michna, K Rogowski

11.55 Numerical investigation of Air Flow Within a Human Nasal Cavity.
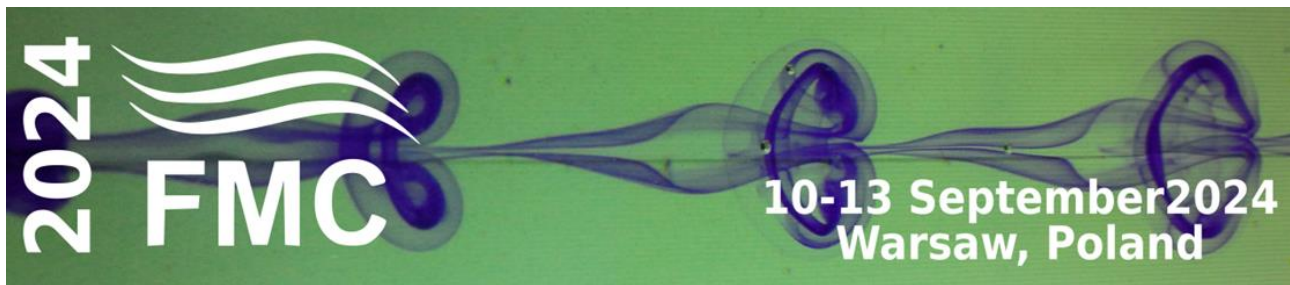*P Niegodajew*

Session #8, **Turbulence and Transition**

Thursday, 10.15-12.15

September 12th, 2024

Room 1.01 Chairman: Prof. J.M. Floryan

10.15 Anisotropic turbulence in clouds.
S Król, M Wacławczyk, P Jędrejko, S Malinowski

10.35 Gradient-based master-length scale in modeling the stable atmospheric boundary layer dynamics.
L Lobocki, P Porretta-Tomaszewska

10.55 Tracking invariant solutions of the Navier-Stokes within spectral element framework.
S Gepner, Genta Kawahara

11.15 Self-similarity of a triangular turbulent free jet.
M Azad

11.35 Global instabilities on ROTEX-T cone-flare model in hypersonic flow at high altitude cruise conditions.
K Dylewicz, V Theofilis

11.55 Semiempirical model of the acoustics of a supersonic jet upon collision with a perpendicular wall.
V Oliynik, T Batutina (online)

Session #9, **Aerodynamics**

Thursday, 10.15-12.15

September 12th, 2024

Room 4.04

Chairman: Prof. L.P. Ruiz-Calavera

10.15 Investigations of Reynolds number effect on Mach number distribution on compressor stator profile.
M Piotrowicz, A Joseph, P Flaszynski, M Kurowski, P Doerffer

10.35 Effect of yaw angle on wind turbine power generation and velocity in the wake.
F Wasilczuk, K Pietrzycka, R Szewczuk, P Flaszynski

10.55 On Streamwise Vorticity Dynamics in Circular Cylinder Wake.
V Uruba, P Prochazka, D Duda

11.15 Validation of Yamaguchi-Ichikawa water hammer model.
K Urbanowicz, C Di Nucci, B K Sharma, K Ashok, S Krajewski

11.35 Velocity profile correction in the analytical model of flow between disks of Tesla turbine.
K Rusin, W Wróblewski, E H Malekshah, M Pahlavanzadeh, S Rulik

11.55 Assessment of Wind Conditions in Urban Spaces: A Case Study of Warsaw Downtown.
M Pisula, M Poćwierz

Sponsors' session

Thursday, 14.30-16.30
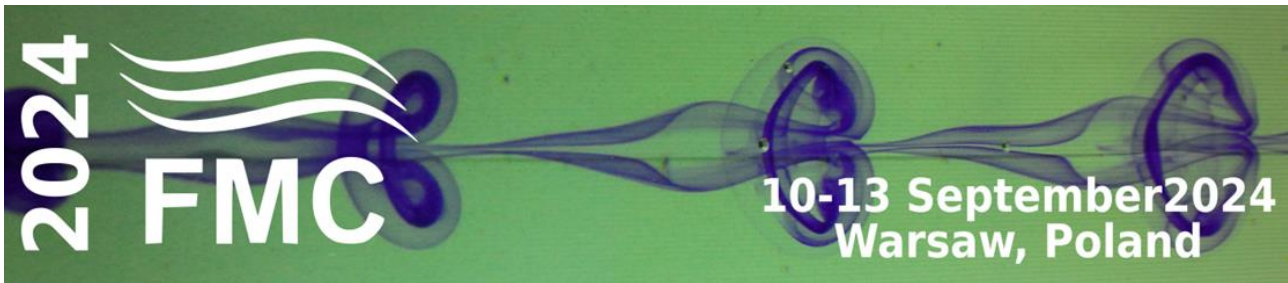
September 12th, 2024

Room 1.01

Chairman: Prof. J. Szumbarski

1. CIM-mes Projekt Sp. z o.o.
   A Jaworski Numerical modelling in space applications

2. Symkom Sp. z o.o.
   A Piechna AI Meets Simulation: Elevating Engineering simulations with ANSYS

3. Symkom Sp. z o.o.
   A Piechna ANSYS STK: Design of Aerospace Systems and Air Defense Missions

4. Łukasiewicz-Institute of Aviation/Industry Contact Point Smart and Clean Mobility
   Jakub Kapuściński Horizon Europe opportunities for facing CFD challenges

5. Eurotek/Dantec *Dantec Dynamics systems in Macro and Micro Experimental Fluid Dynamics* Karsten Dörner

Session #10, **Computational Fluid Dynamics**

Friday, 10.15-12.15

September 13th, 2024

Room 4.01

Chairman: Prof. M. Marek

10.15   Step-by-step CFD validation of turbulent particle transport and deposition in industrial bends.
   J Malet, R Ploix, E Géhin

10.35   High performance least-squares spectral/hp element method solvers for fluid dynamics problems.
   J Gałecki, J Szumbarski

10.55   Aerodynamic force of a marine midge.
   C-h Wu, B-F Chen, K-Y Soong

11.15   Optimization of Fractal Structures for Efficient Heating/Cooling of the Air/Fluid Flow.
   B Kopiczak, K Karbowski, K Nering, Z Malecha, R Chrzan, J Gawlik, A Sucherska,J Szaleniec, J Karbowski

11.35   Application of trapped vortices for control of flow around a bridge pear.
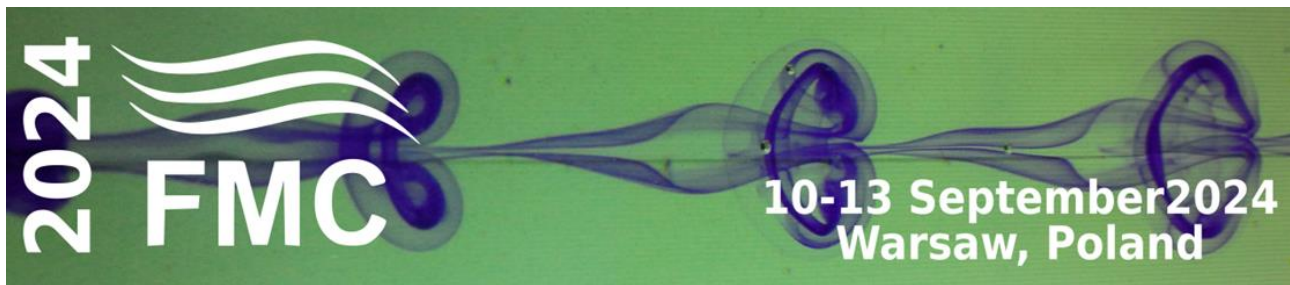   *I Gorban (online)*

Session #11, **Flow Control and Optimization**

Friday, 10.15-12.15

September 13th, 2024

Room 1.01

Chairman: Prof. K.J. Fidkowski

10.15   LES of flow dynamics downstream of new type bluff bodies.
L Caban, A Wawrzak, A Tyliszczak, D Thévenin

10.35   Machine learning-supported CFD optimization of heat transfer in a pipe with a corrugated wall shape.
P Kamiński, Y Li, K Wawrzak, A Tyliszczak, B Noack

10.55   Airfoil design in separated ultra-low Reynolds flows using a shear stress-based inverse design method.
Z Drafsh, M Nili-Ahmadabadi, M Y Ha

11.15   Design Optimisation of a Ducted Wind Turbine   .
M Z Akhter, A H Shaaban

11.35   Improvement of the aerodynamic performance using the developed method of energy-efficient flow control.
N Yurchenko, P Vynogradskyy, R Pavlovskyy

11.55   Box-Spline parametrisation of motion kinematics in aerodynamic optimisation of flapping motion.
*M Rutkowski, Ł Łaniewski-Wołłk*

Session #12, **Aerodynamics**

Friday, 10.15-12.15

September 13th, 2024

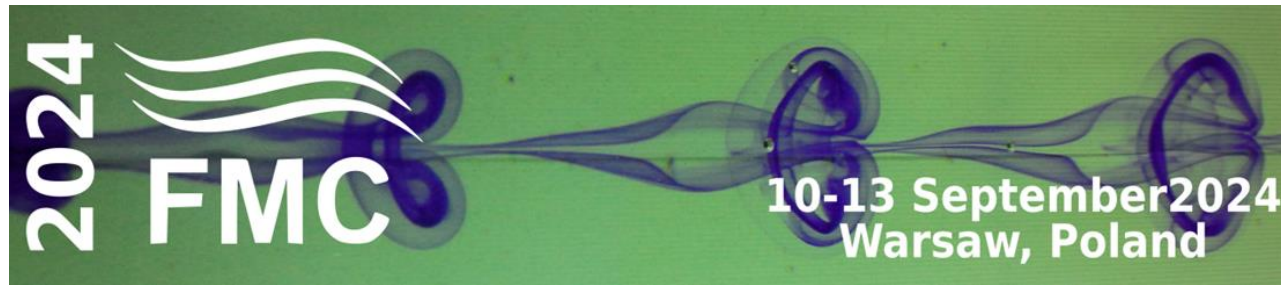*Room 4.04*

Chairman: Prof. D. Simoni

10.15   Aerodynamic and aeroacoustic analysis of a model UAV propeller.
O Szulc, P Flaszyński, T Suresh

10.35   Aerodynamic Multipoint Aircraft Design Including Aeroelastic Wing Deformation.
K Kubryński

10.55   Analysis of turbulent flow separation control method using wall corrugation under different flow history.
A Dróżdż, V Sokolenko, W Elsner

11.15   Galloping of the slender column undergoing the Strouhal critical wind velocity.
M Bryk, P J Ziółkowski, J Badur

11.35   Creation and verification of a large Vertical Axis Wind Turbine airfoil class.
J Wiśniewski, J Szumbarski

11.55   Application of CFD airflows to aid nasal obstruction diagnosis.
M Dzikowski, P Szymczak
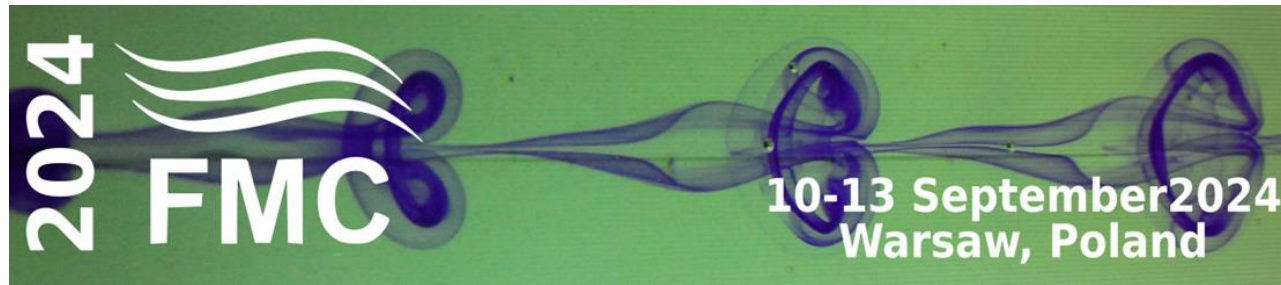
Parallel sessions #1 – #3
Wednesday, 10.15-12.15
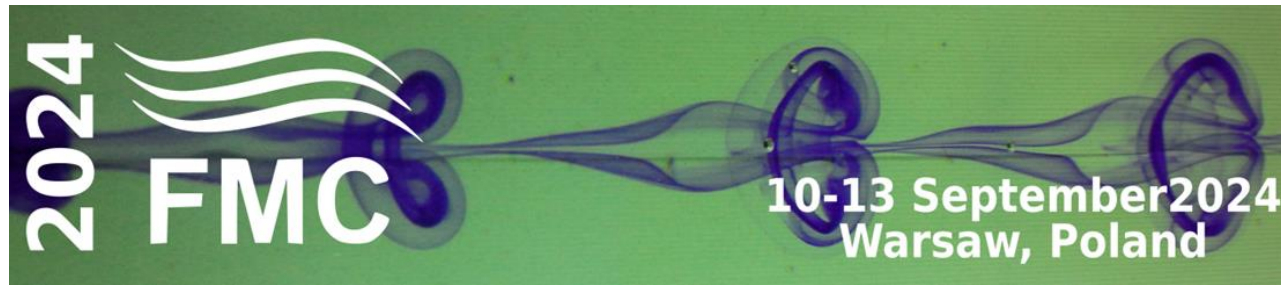**September 11th, 2024**

| Session #1 **Combustion and Reactive flows** Room 4.01 Chairman: Prof. W. Wróblewski	Session #2 **Experimental Methods** Room 4.04 Chairman: Prof. W. Elsner	Session #3 **Multiphase flows and Complex fluids** Room 1.01 Chairman: Prof. J. Pozorski
Investigation of steam-diluted hydrogen combustion in a counter-current nozzle configuration using LES. *A Wawrzak, A Tyliszczak*	Integrated Approaches in Microfluidic Design for Enhanced Droplet Manipulation and Biological Insights. *P Korczyk*	Collision efficiency of cloud droplets considering electrostatic and hydrodynamic interactions. *A Michel, B Rosa, A Ababaei*
Swirl Effect Assessment on NOx Formation for CH4/H2/NH3 Flame under MILD Condition. *A Mardani, K C Kim*	Influence of micro- and mesoscale on the permeability characteristics of 3D printed porous objects. *K Bukowski, Ł Klotz*	On improving the spatial resolution of the statistical model of the interphase region. *T Wacławczyk*
Revisiting homogeneous modeling with volume averaging theory: structured catalysts for steam reforming and CO2 methanation. *J A M Méndez, B Dorneanu, H Schmidt, H Arellano-García*	PIV measurement of model nuclear fuel rod bundle. *D Duda*	Interaction of liquid droplets with microstructured and nanostructured surfaces. *N Kizilova*
A high-order LES of a flow in complex geometry. *K Wawrzak, A Wawrzak, A Bogusławski, A Tyliszczak*	Experimental Challenges of Nano and Microfluidics. *T Kowalewski*	Impact of pipe inclination on fill height for partially filled pipes used in a custom slurry transport rig. *A Bose*
Numerical modelling of a rotary shock wave compression heat engine with a rotating detonation wave combustion chamber. *J Piechna, M Szudarek, A Piechna*	Mapping the efficiency of a novel rotating arc-wall inline mixer *M Kiwan, E Younes, C Castelain, T Burghelea*	Droplet surfing on a boundary layer - origin of droplet shape oscillation. *M Klamka, T Bobinski*
Some theoretical problems of creation the mathematic model of joint treatment of wastewaters with organic contaminants and nitrogen compounds by method of biofiltration. S Telyma, O Oliynyk *(online)*		Forces acting on a pendant drop on a small pillar. *M Arogeti, A Vinod, M Tadmor*

Parallel sessions #4 – #6
Wednesday, 14.30-16.30
September 11th, 2024

Session #4 **Computational Fluid Dynamics** Room 4.01 Chairman: Prof. S. Sherwin	Session #5 **Turbulence and Transition** Room 4.04 Chairman: Prof. G. Kawahara	Session #6 **Multiphase flows and Complex fluids** Room 1.01 Chairman: Prof. Piotr Korczyk
Isotropy of numerical errors in the context of implicit large eddy simulation. *A Kajzer*	Turbulent cascades in the Atmospheric Boundary Layers. *M Wacławczyk, J L Nowak, J C Vassilicos, S Król, S P Malinowski*	Particle clustering and velocity statistics in large-eddy simulations of isotropic turbulence. *M Rajek, J Pozorski*
Quantification of laminar mixing efficiency using 'strange eigenmodes' approach. *J Fabisiak, S Gepner*	Atmospheric turbulence: anisotropic, nonstationary and intermittent. What can we do? *S Malinowski, M Wacławczyk, J Nowak, S Król, R Grosz*	Estimation of Droplet size using Pressure Oscillation-based approach in Microfluidics by Simulations. *B Bakthar Khan*
Heat transfer of laser-illuminated gold nanorod platforms distributed in a flow germicidal chamber. *P Radomski*	Influence of porous material on the flow behind backward-facing step - experimental study. *K Bukowski, K Gumowski, Ł Klotz*	Utilizing a pressure-based CFD solver for modelling wet steam flow in low-pressure turbine stages: a predictive approach to assessing flow losses. *S Shabani, M Majkut, S Dykas, K Smolka*
Numerical modelling of gas flow in random packed bed with a helical flow deflector. *M Marek*	Replicating environmental flows with an active grid. *P Baj, P Czubak, B Załęcki, A Czaplińska*	Numerical simulation of the oil-water flow in a horizontal pipe in a stratified flow regime. *D Asendrych*
Numerical simulation of two-phase flow in OpenFOAM software. *S Koval, N Dimitrieva (online)*	A shear flow in counter-rotating Taylor-Couette configuration. *E Tuliszka-Sznitko*	Liquid-gas flow modelling in horizontal pipe. *M Jaszczur, P Marczak, R Hanus, A Golijanek-Jędrzejczyk, A Andruszkiewicz, M Zych*
	Large Eddy Simulation of turbulent flow at the entrance to an annular pipe section. *P Prusiński, S Kubacki*	Time-resolved imaging of reactive transport instability during multiphase flow in porous media. *M Dzikowski, P Szymczak*

Parallel sessions #7 – #9
Thursday, 10.15-12.15
September 12th, 2024

Session #7 **Computational Fluid Dynamics** Room 4.01 Chairman: Prof. A. Tyliszczak	Session #8 **Turbulence and Transition** Room 1.01 Chairman: Prof. J.M. Floryan	Session #9 **Aerodynamics** Room 4.04 Chairman: Prof. L.P. Ruiz-Calavera
Dissimilar heat transfer enhancement in pipe flow with deep axial grooves. S Motoki, G Kawahara	Anisotropic turbulence in clouds. S Król, M Wacławczyk, P Jędrejko, S Malinowski	Investigations of Reynolds number effect on Mach number distribution on compressor stator profile. M Piotrowicz, A Joseph, P Flaszynski, M Kurowski, P Doerffer
Linear Stability of Compressible Flows in Open-Cavities with Curved Downstream Walls. V Pezlar, K Dylewicz, V Theofilis	Gradient-based master-length scale in modeling the stable atmospheric boundary layer dynamics. L Lobocki, P Porretta-Tomaszewska	Effect of yaw angle on wind turbine power generation and velocity in the wake. F Wasilczuk, K Pietrzycka, R Szewczuk, P Flaszynski
Numerical evaluation of mass diffusive compressible fluids flows models. T Bodnar	Tracking invariant solutions of the Navier-Stokes within spectral element framework. S Gepner, Genta Kawahara	On Streamwise Vorticity Dynamics in Circular Cylinder Wake. V Uruba, P Prochazka, D Duda
Code coupling for the Tube Support Plate clogging in steam generators. A Couvez, S Gyuran, N Leterrier, P Omnes, E Saikali	Self-similarity of a triangular turbulent free jet. M Azad	Validation of Yamaguchi-Ichikawa water hammer model. K Urbanowicz, C Di Nucci, B K Sharma, K Ashok, S Krajewski
URANS numerical analysis of turbulence intensity influence on laminar separation bubble in the case of the NACA0018 airfoil. J Michna, K Rogowski	Global instabilities on ROTEX-T cone-flare model in hypersonic flow at high altitude cruise conditions. K Dylewicz, V Theofilis	Velocity profile correction in the analytical model of flow between disks of Tesla turbine. K Rusin, W Wróblewski, E H Malekshah, M Pahlavanzadeh, S Rulik
Numerical investigation of Air Flow Within a Human Nasal Cavity. P Niegodajew	Semiempirical model of the acoustics of a supersonic jet upon collision with a perpendicular wall. V Oliynik, T Batutina (online)	Assessment of Wind Conditions in Urban Spaces: A Case Study of Warsaw Downtown. M Pisula, M Poćwierz
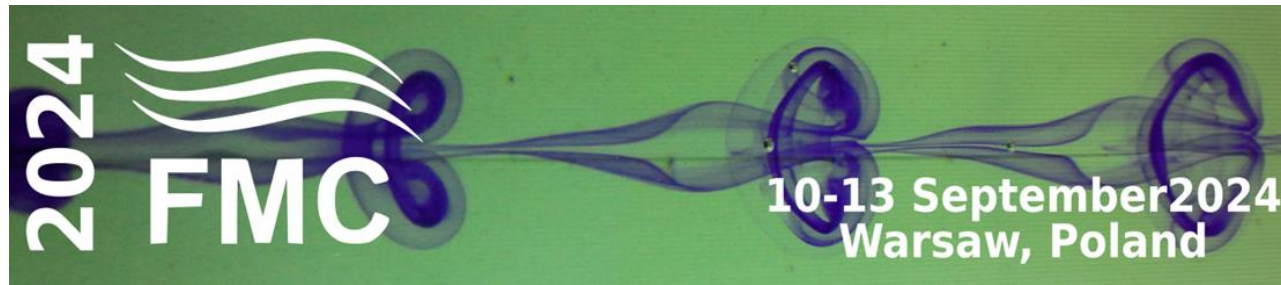
Parallel sessions #10 – #12
Friday, 10.15-12.15
September 13th, 2024

Session #10 **Computational Fluid Dynamics** Room 4.01 Chairman: Prof. M. Marek	Session #11 **Flow Control and Optimization** Room 1.01 Chairman: Prof. K.J. Fidkowski	Session #12 **Aerodynamics** Room 4.04 Chairman: Prof. D. Simoni
Step-by-step CFD validation of turbulent particle transport and deposition in industrial bends. *J Malet, R Ploix, E Géhin*	LES of flow dynamics downstream of new type bluff bodies. *L Caban, A Wawrzak, A Tyliszczak, D Thévenin*	Aerodynamic and aeroacoustic analysis of a model UAV propeller. *O Szulc, P Flaszyński, T Suresh*
High performance least-squares spectral/hp element method solvers for fluid dynamics problems. *J Gałecki, J Szumbarski*	Machine learning-supported CFD optimization of heat transfer in a pipe with a corrugated wall shape. *P Kamiński, Y Li, K Wawrzak, A Tyliszczak, B Noack*	Aerodynamic Multipoint Aircraft Design Including Aeroelastic Wing Deformation. *K Kubryński*
Aerodynamic force of a marine midge. *C-h Wu, B-F Chen, K-Y Soong*	Airfoil design in separated ultra-low Reynolds flows using a shear stress-based inverse design method. *Z Drafsh, M Nili-Ahmadabadi, M Y Ha*	Analysis of turbulent flow separation control method using wall corrugation under different flow history. *A Dróżdż, V Sokolenko, W Elsner*
Optimization of Fractal Structures for Efficient Heating/Cooling of the Air/Fluid Flow. *B Kopiczak, K Karbowski, K Nering, Z Malecha, R Chrzan, J Gawlik, A Sucherska,J Szaleniec, J Karbowski*	Design Optimisation of a Ducted Wind Turbine *M Z Akhter, A H Shaaban*	Galloping of the slender column undergoing the Strouhal critical wind velocity. *M Bryk, P J Ziółkowski, J Badur*
Application of trapped vortices for control of flow around a bridge pear. *I Gorban (online)*	Improvement of the aerodynamic performance using the developed method of energy-efficient flow control. *N Yurchenko, P Vynogradskyy, R Pavlovskyy*	Creation and verification of a large Vertical Axis Wind Turbine airfoil class. *J Wiśniewski, J Szumbarski*
	Box-Spline parametrisation of motion kinematics in aerodynamic optimisation of flapping motion. *M Rutkowski, Ł Łaniewski-Wołłk*	Application of CFD airflows to aid nasal obstruction diagnosis. *M Dzikowski, P Szymczak*