

ERCOFTAC/SIG 42  
13th Workshop on Synthetic Turbulence Models

28th-29th June 2018

Institute of Fluid-Flow Machinery (IMP), Polish Academy of Sciences, Gdańsk, Poland

Synthetic flows for complex heat and mass transfer

IMP Auditorium (1st floor), ul. Fiszer 14, 80-231 Gdańsk

Programme as of June 21, 2018

**Thursday 28th June 2018**

09:30-10:00 **Arrival, Coffee & Tea**

10:00-10:10 **Opening** - Franck Nicolleau, Andrzej Nowakowski & Jacek Pozorski

10:10-10:30 **Welcome & presentation of the Institute** - Prof. Piotr Doerffer, Deputy Director for Research

1st session - chair F. Nicolleau

10:30-11:00 **Henryk Kudela**, Faculty of Mechanical Eng, Wrocław University of Technology, Wrocław, Poland  
*Collapse of point vortices and arising of vortex threads*

11:00-11:30 **Yi Li**, School of Mathematics and Statistics, SFMG, University of Sheffield, Sheffield, UK  
*Constructing inhomogeneous non-Gaussian turbulent fields with the assistance of optimization techniques*

11:30-12:00 **Emmanuel Akinlabi**, Institute of Geophysics, Faculty of Physics, University of Warsaw, Poland  
*Fractal and multifractal reconstruction of subgrid scales in large eddy simulation of atmospheric turbulence*

12:00-13:30 **Lunch break**

2nd session - chair J. Pozorski

13:30-14:00 **Michael Bestehorn**, Brandenburg University of Technology, Cottbus Senftenberg, Germany  
*Dimension-Reduced Model for Deep Water Waves*

14:00-14:30 **Andrzej Nowakowski**, Sheffield Fluid Mechanics Group, University of Sheffield, UK  
*Resolution of vorticity field at density discontinuity in numerical simulation of multicomponent flows*

14:30-15:00 **Tomasz Waławczyk**, Dept. of Power & Aeronaut. Engng, Warsaw University of Technology, Poland  
*A statistical model of (turbulent) interface between the two immiscible fluids*

15:00-15:30 **Coffee break**

3rd session - chair Y. Li

15:30-16:00 **Amirul Khan**, School of Civil Engineering, University of Leeds, UK  
*Real-time LES for urban and indoor environments*

16:00-16:20 **Dariusz Kardaś, Sylwia Polesek-Karczewska & Izabela Wardach-Święcicka**, IMP Gdańsk, PL  
*Complex heat and mass transfer in reacting bed*

16:20-16:40 **Paweł Flaszyński**, IMP Gdańsk, Poland  
*Streamwise vortex generators and their application to flow control*

16:40-17:10 **Maria Knorps & Jacek Pozorski**, IMP Gdańsk, Poland  
*Fractal-based modelling of subfilter scales in LES with heavy particles*

17:15-18:00 **IMP lab visit**

19:00-22:00 **Dinner**

## Friday 29th June

4th session - chair H. Kudela

- 09:00-09:20 **Adam Kajzer & Jacek Pozorski**, IMP Gdańsk, Poland  
*Weakly-compressible approach for turbulent channel flow and the issue of initial conditions*
- 09:20-09:40 **Syed M. Usama & Nadeem Malik**, King Fahd University of Petroleum and Minerals, Saudi Arabia  
*3D sparse grid turbulence*
- 09:40-10:10 **Katarzyna Strzelecka & Henryk Kudela**, Wrocław University of Technology, Wrocław, Poland  
*Boundary layer eruption behind the bridge pillar model*

10:10-10:30 **Coffe break**

5th session - chair A. Khan

- 10:30-11:00 **Nadeem Malik**, King Fahd University of Petroleum and Minerals, Saudi Arabia  
*Non-Richardson turbulent pair diffusion regimes for fluid and inertial particles*
- 11:00-11:30 **Alejandro Perez Riascos**, Dept. of Civil Eng., Universidad Mariana, San Juan de Pasto, Columbia  
*Random walks on networks: Lévy flights and fractional transport*
- 11:30-12:00 **Thomas Michelitsch**, Université Pierre et Marie Curie, IJLRDA, Paris, France  
*Random walks with long range steps generated by fractional Laplacian matrices: recurrence behaviour and emergence of Levy flights*

12:00-13:30 **Lunch break**

6th session - chair N. Malik

- 13:30-13:45 **Bernard Collet**, Université Pierre et Marie Curie, IJLRDA, Paris, France  
*A matrix function approach to generate Markovian random walks on lattices*
- 13:45-14:00 **Svetlana Karimova & Jose-Manuel Redondo**, Fisica Aplicada UPC, Spain  
*Environmental patterns and intermittent cascades*
- 14:00-14:30 **Jose-Manuel Redondo & Ania Matulka**, Fisica Aplicada UPC, Spain  
*Complex heat and mass transfer in geophysical flows*
- 15:00-15:30 **Otman Ben Mahjoub & Jackson Tellez Alvarez**, Department of Physics,  
Polydisciplinary Faculty of Larache, Abdelmalek Essaadi University, Morocco - UPC, Barcelona, Spain  
*TBA*
- 15:30-16:00 **Workshop closure & Farewell coffee**