

UK Turbulence Consortium Annual Review 2022

28th/29th March 2022, CAGB 200, Level 2
South Kensington Campus, Imperial College London

Monday 28th March

09.30-10.00 Arrival, Coffee

10.00-10.30 Welcome / Announcements (Laizet)

10.30-12.00 Session 1 (Chair: Sandham)

10.30 talk 1 Raynold Tan (Southampton)

“Direct Numerical Simulation of Compressible Flow over Rough Surfaces”

10.45 talk 2 Jian Fang (STFC)

“Direct-numerical simulation of hypersonic impinging shock-wave/turbulent boundary layer interaction at Mach 5”

11.00 talk 3 Pradeep Moise (Southampton)

“The relation between different types of transonic buffet”

11.15 talk 4 Adriano Cerminara (Wolverhampton)

“Transpiration cooling in hypersonic turbulent flow with porous injection at different blowing ratios”

11.30 talk 5 Nicolas Cerulus (Liverpool)

“On The stability of supersonic flow past planar and axisymmetric compression corners”

11.45 talk 6 Chen Chen (Queen Mary)

“Transport property prediction and inhomogeneity analysis of supercritical fluids”

12.00-13.00 Lunch

13.00-14.00 Invited Speaker 1

Gihan Mudalige (Warwick)

“Evolving HPC Applications for Performance Portability – Lessons Learnt from OP-DSLs”

14.00-15.30 Session 2 (Chair: Sherwin)

14.00 talk 7 Xiao Hu (Imperial)

“Attenuation of the unsteady loading on a high-rise building using feedback control”

14.15 talk 8 Xutong Zhang (Manchester)

“Assessment of flow prediction for the flow around a finite rectangular prism: influences of the turbulence model and the mesh”

14.30 talk 9 Tamás István Józsa (Oxford)

“Numerical Investigation of the Hydrodynamics of Noise Shielding Canopies”

14.45 talk 10 Shane Nicholas (City)

“On the effect of filament inclination on the different regimes of canopy flows”

15.00 talk 11 Eldad Avital (Queen Mary)

“Particle dynamics simulations for case studies of vegetated waterway sediment and upper room UVC air disinfection”

15.15 talk 12 Joshua Maynard (Cambridge)

“Unsteady Structure of Compressor Tip Leakage Flows”

15.30-16.00 Break

16.00-17.00 Session 3 (Chair: Laizet)

16.00 talk 13 Mohsen Lahooti (Imperial)

“Wall-resolved under resolved DNS simulation of vortex-induced vibration of wind turbine blades”

16.15 talk 14 Marta Camps Santasmasas (Manchester)

“Numerical study of waves, current and turbulence on tidal turbines”

16.30 talk 15 Amy Hodgkin (Imperial)

“How do shear and thermal stratification impact wind turbine tip-vortex stability?”

16.45 talk 16 Juan Carlos Bilbao-Ludena (Imperial)

“On the structure of vorticity field in a separated wing flow; analysis using Direct Numerical Simulation”

17.00-18.00 Invited Speaker 2

Viv Kendon (Strathclyde)

“Introduction to quantum computing and CCP-QC”

18.00-20.30 Reception/networking event with drinks and food
(next to the lecture room at Imperial College)

Tuesday 29th March

09.00-10.30 Session 4 (Chair: van Reeuwijk)

09.00 talk 17 Jundi He (Sheffield)

“Study of a horizontal buoyant jet of hot helium issued into air”

09.15 talk 18 Maarten van Reeuwijk (Imperial)

“Direct simulations of plumes in a cross-flow”

09.30 talk 19 Thomas Jelly (Leicester)

“Sensitivity of rough-wall turbulence to changes in spanwise effective slope”

09.45 talk 20 Michael Leschziner (Imperial)

“Auto-encoder-assisted analysis of amplitude and wavelength modulation of near-wall turbulence by outer large-scale structures in channel flow at friction Reynolds number of 5200”

10.00 talk 21 Rasmus Schlander (Imperial)

“Analysis of wall mass transfer in turbulent pipe flow combining extended proper orthogonal decomposition and Fukugata-Iwamoto-Kasagi identity”

10.15 talk 22 Zhong-Nan Wang (Birmingham)

“LES study of noise and its sources of closely installed jets”

10.30-11.00 Coffee Break

11.00-12.00 Session 5 (VIRTUAL, chair: Laizet)

11.00 talk 23 Alex Skillen (Manchester)

“Natural convection within a loop with cold-flow injection”

11.15 talk 24 Jingzi Huang (Imperial)

“Entrainment in turbulent fountain internal structure, a DNS study”

11.30 talk 25 Jacob Turner (Southampton)

“Quadrupole noise due to aerofoil flow separation and stall”

11.45 talk 26 Anton Burtsev (Liverpool)

“Linear Modal Instabilities Around Post-stall Swept and Tapered Wings”

12.00-13.00 Invited Speaker 3

Ben Rogers (Manchester)

“Turbulence modelling with meshless methods and SPH: meshless freedom or folly?”

13.00-14.00 Lunch

14.00-15.15 Session 6 (Chair: Emerson)

14.00 talk 27 Stefano Rolfo (STFC)

“x3div: a GPU(s) porting journey for Xcompact3d”

14.15 talk 28 Paul Bartholomew (EPCC)

“Adding in-situ visualisation to Xcompact3d”

14.30 talk 29 Paulo Silva (Cranfield)

“High-order Solutions for Rotating Wings”

14.45 talk 30 Athanasios Giannenas (Imperial)

“A Cartesian immersed boundary method based on 1D flow reconstructions for high-fidelity simulations of incompressible turbulent flows around moving objects”

15.00 talk 31 Zhihua Xie (Cardiff)

“A Cartesian cut-cell method for moving geometries with reduced spurious pressure oscillations”

15.15-15.45 Close and Awards (Laizet)