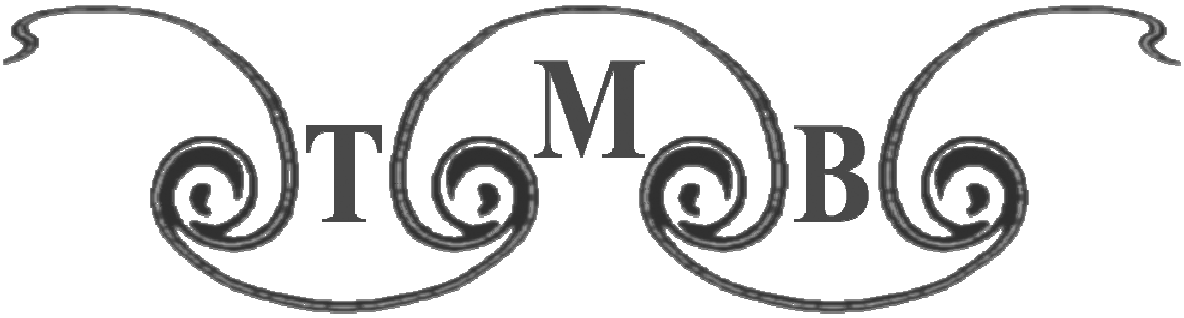

Turbulent Mixing and Beyond

Third International Conference and Advanced School

PROGRAM

21 – 28 August, 2011

The Abdus Salam International Centre for Theoretical Physics

Strada Costiera 11, 34014 Trieste, Italy

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- Physica Scripta, The Journal of the Royal Swedish Academy of Sciences for the Science Academies and the Physical Societies of the Nordic Countries

When?

Routine

9.00 – 10.00	lectures, talks
10.00 – 10.30	*coffee break*
10.30 – 12.30	lectures, talks
12.30 – 14.00	*lunch*
14.00 – 16.00	lectures, talks
16.00 – 16.30	*coffee break*
16.30 – 18.30	lectures, talks

Parallel sessions

23 August 2011	Tuesday	9.00-10.00, 10.30 – 12.30, 14.00 – 16.00
24 August 2011	Wednesday	9.00-10.00, 10.30 – 12.30
25 August 2011	Thursday	9.00-10.00, 10.30 – 12.30
26 August 2011	Friday	9.00-10.00, 10.30 – 12.30, 14.00 – 16.00

Poster session:	24 August 2011	Wednesday	16.30 – 18.30
Round Tables:	26 August 2011	Friday	16.30 – 18.30
Exhibit:	22-26 August 2011		9.00 – 16.30

Where?

Leonardo da Vinci (Main) Building

Lectures, Talks:	Main Lecture Hall
Lectures, Talks:	Euler Lecture Hall
Poster Sessions:	Poster Hallway near Main Lecture Hall
Round Tables:	Oppenheimer Room
Exhibits:	Lobby near Main Lecture Hall
Others:	Seminar room and office
Computer/Internet:	Computer rooms, wireless

Coffee, Receptions, Banquet

Bar (coffee, tea):	Mon–Fri	08.00 – 17.00	Main Building, 1st floor	
Coffee Breaks:	Mon–Fri	10.30 and 16.00	near Main Lecture Hall	
Receptions:	21 Aug Sun	18.30-20.30	26 Aug Sat	19.00 – 21.00
Banquet:	24 Aug Wed	19.00 – 21.00		

Special presentations

Exhibit

Institute of Physics Publishing (IOP), UK

Physica Scripta, The Journal of the Royal Swedish Academy of Sciences for the Science Academies and the Physical Societies of the Nordic Countries

22-26 August 2011

9.00 – 16.30

21 August 2011, Sunday

Themes: ***Free Time, Organizing Committee Meeting***

16.30-18.30 ***Registration, Leonardo Building (near Main Lecture Hall)***

18.30-20.30 ***Reception, Leonardo Building (Cafeteria)***

22 August 2011, Monday

Main Lecture Hall

8.00-8.30	Registration	Registration	
8.30-9.00	Welcome	TMB Organizing Committee	
	Theme: Experiments and diagnostics		
9.00-9.35	Rotating thermal convection: a review	Robert Ecke	Los Alamos National Laboratory
9.35-10.00	Turbulent convection at very high Rayleigh and Taylor numbers	Joseph J Niemela	ICTP, Italy
10.00-10.30	*Coffee Break*		
	Theme: Experiments and diagnostics		
10.30-11.05	Rayleigh-Taylor instability between stable stratifications	Stuart B. Dalziel	University of Cambridge, UK
11.05-11.30	On the length of near-wall plumes in turbulent convection	Baburaj A. Puthenveettil	Indian Institute of Technology, Madras, India
11.30-12.00	Measuring Lagrangian accelerations using an instrumented particle	Robert Zimmermann	ENS de Lyon, France
12.00-12.30	Review of the experimental investigations of gravitational turbulent mixing	Alexander V. Pavlenko	Federal Nuclear Center - Zababakhin Research Institute of Technical Physics, Russia
12.30-14.00	*Lunch*		

22 August 2011, Monday

Main Lecture Hall

Themes: Plasmas and Magnetohydrodynamics

14.00-14.35	Parallel electric fields producing relativistic electrons at large spatial scales during magnetic reconnection	Jan Egedal	Massachusetts Institute of Technology, USA
14.35-14.50	Electrostatic solitary waves and turbulence in the universe of collisionless plasmas	Li-Jin Chen/ Walter. Gekelman	University of New Hampshire, USA
14.50-15.20	Fast-framing camera and probe measurements of intermittent turbulence and nonlinear structures in a linear, magnetized plasma	Steve Vincena	University of California, Los Angeles, USA
15.20-16.00	Fully three-dimensional magnetic field line reconnection within magnetic flux ropes and current sheets	Walter Gekelman	University of California, Los Angeles, USA
16.00-16.30	*Coffee break*		

Themes: Plasmas and Magnetohydrodynamics

16.30-17.00	Entrainment of Stable Zones and Turbulence Spreading in Magnetized Plasmas	Patrick H. Diamond	NFRI, Korea; University of California, San Diego, USA
17.00-17.25	Investigation of magnetohydrodynamic turbulence described by the space-time functional formalism	M.C. Meshram	Laxminarayan Institute of Technology, India
17.25-18.00	Basic properties of MHD turbulence	Andrey Beresnyak	Ruhr-Universitat Bochum, Germany
18.00-18.30	Turbulent mixing and acoustics in stellar envelopes	Irina N. Kitiashvili	Stanford, USA

23 August 2011, Tuesday

Main Lecture Hall

Themes: Non-equilibrium processes, Astrophysics

9.00-9.30	Poloidal / toroidal decomposition in Rayleigh-Taylor mixing zones	Benoıt-Joseph Grea	CEA, France
9.30-10.05	Turbulent mixing in the Sun: comparing models with observations	Alexander Kosovichev	Stanford University, USA
10.05-10.30	*Coffee break*		

Themes: Turbulence and Wall-bounded flows

10.30-10.55	Compressibility effects in Rayleigh-Taylor flow: influence of the stratification	Serge Gauthier	CEA, France
10.55-11.25	Asymptotic states in turbulent mixing: the role of Peclet number in scalar fluxes, dissipation, spectra and intermittency	Diego Donzis	Texas A&M University, USA
11.25-12.00	Particulate dispersion and reflection layers in a serpentine duct	Paul Durbin	Iowa State U, USA
12.00-12.35	Evolution of mean dynamics in transitional boundary layer flow	Joseph C. Klewicki	U New Hampshire, USA
12.35-14.00	*Lunch*		

23 August 2011, Tuesday

Euler Lecture Hall

Course: Anisotropic Turbulence and Waves

Themes: Geophysics and Physics of Atmosphere

9.00-9.35	Analytical theory of the buoyancy - Kolmogorov subrange transition in turbulent flows with stable stratification	Boris Galperin	University of South Florida, USA
9.35-10.10	Quasi-normal scale elimination theory of turbulence anizotropization by Coriolis force	Semion Sukorianksy	Ben-Gurion University of the Negev, Israel
10.10-10.30	*Coffee break*		

Course: Anisotropic Turbulence and Waves

Themes: Geophysics and Physics of Atmosphere

10.30-11.05	Diffusion in strongly stratified fluids	Jackson R. Herring	National Center for Atmospheric Research, USA
11.05-11.30	Turbulent waves: myth or reality?	Oleg V. Troshkin	Institute for Computer Aided Design of the Academy of Sciences, Russia
11.30-12.05	Energetics, mixing efficiency, and non-viscous dissipation in turbulent stratified fluids	Remi Tailleux	University of Reading, UK
12.05-12.30	Lagrangian and Eulerian velocity structure functions in hydrodynamic turbulence	V.A. Sirota	Lebedev Physical Inst. Acad. Sciences, Russia
12.30-14.00	*Lunch*		

23 August 2011, Tuesday

Main Lecture Hall

Themes: Interfacial dynamics, Stochastic modeling, Magnetohydrodynamics

14.00-14.35	Simulating immiscible interface dynamics in complex turbulent flows	Marcus Herrmann	Arizona State University, USA
14.35-15.10	Non-local transport	Diego del-Castillo-Negrete	Oak Ridge National Laboratory, USA
15.10-15.45	Intrinsic magnetic stochasticity in fusion plasmas	Linda E. Sugiyama	Massachusetts Inst. Technology, USA
15.45-16.15	TBA	Paul Terry	U Wisconsin, Madison, USA
16.15-16.30	*Coffee Break*		

Themes: Mathematical aspects, Turbulence

16.30-17.05	Hamiltonian bifurcation theory for a rotating flow subject to elliptic straining field	Yasuhide Fukumoto	Kyushu U, Japan
17.05-17.30	3D Euler equations and ideal MHD mapped to regular systems: probing the finite-time blowup hypothesis	Miguel D. Bustamante	University College Dublin, UK
17.30-18.00	Do finite size neutrally buoyant particles dispersed in a turbulent flow clusterize?	L. Fiabane	ENS de Lyon, France
18.00-18.30	Atmospheric turbulence forecasting: a new approach based on Bayesian hierarchical modeling and the high-resolution simulations	Joe Werne	NorthWest Research Associates, CoRA Division, USA

23 August 2011, Tuesday

Euler Lecture Hall

Course: Anisotropic Turbulence and Waves

Themes: Geophysics and Physics of Atmosphere

14.00-14.35	Inertia-gravity waves and deep ocean mixing	Viktor I. Shrira	Keele University, UK
14.35-15.05	Underwater Tornado	Alexey V. Byalko	Landau Inst. Theoretical Physics, Russia
15.05-15.30	Numerical simulation of advection-diffusion of a passive solute in unsteady water flow	G. Sánchez Burillo	University of Zaragoza, Spain
15.30-15.50	Vortical structures and internal waves generation around an impermeable solid in a continuously stratified fluid	Iaroslav V. Zagumennyi	Institute for Hydromechanics of National Academy of Sciences, Ukraine
15.50-16.10	Strain along gradient trajectories in passive scalar fields	M. Gampert	RWTH Aachen, Germany
16.15-16.30	*Coffee Break*		

24 August 2011, Wednesday

Main Lecture Hall

Theme: Interfacial dynamics

9.00-9.35	Cascade models of a high Weber number liquid jet breakup	Mikhael Gorokhovski	Ecole Centrale of Lyon, France
9.35-10.00	Singularity formation in interfacial motion with density stratification and surface tension	Chihiro Matsuoka	Ehime University, Japan
10.00-10.30	*Coffee Break*		

Themes: Stochastic processes, Non-equilibrium processes, Magnetohydrodynamics

10.30-11.05	Competitive mixing and competitive thermodynamics	Alexander Klimenko	University of Queensland, Australia
11.05-11.40	Antihydrogen formation by autoresonance-intiated mixing of antimatter plasmas	William Bertsche, The ALPHA Collaboration	Swansea University, UK
11.40-12.10	Magnetohydrodynamic shallow-water turbulence on the sphere	James Cho	Queen Mary University of London, UK
12.10-12.40	The lack of gas dynamic analogy for shallow water flows	Arakel S. Petrosyan	Space Research Institute of the Academy of Sciences, Russia
12.40-14.00	*Lunch*		

24 August 2011, Wednesday

Euler Lecture Hall

Themes: Turbulence, Plasmas

9.00-9.30	Flow structures of scalloped and forced lobed mixers	Parviz Merati	Western Michigan University, USA; Rolls-Royce Corporation, USA
9.30-10.00	Influence of dust concentration on shock wave splitting in discharge plasma in different gases.	A.S. Baryshnikov	Ioffe Physico-Technical Institute, St. Petersburg, Russia
10.00-10.30	*Coffee Break*		

Themes: Magnetohydrodynamics, High energy density physics, Interfacial dynamics

10.30-10.55	Turbulent generation of large-scale magnetic flux concentrations	Axel Brandenburg/ Koen Kemel	Nordita, Denmark
10.55-11.30	Formation mechanisms of jet-like spike in ablative Rayleigh-Taylor instability with preheating	L. F. Wang	Peking University, China
11.30-11.50	A computational parametric study of the Richtmyer-Meshkov instability for an inclined interface	Jacob A. McFarland	Texas A & M University, USA
11.50-12.15	Rayleigh-Taylor unstable flames: the development and effect of turbulence	Elizabeth P. Hicks	U Chicago, USA
12.15-12.40	Numerical simulation of a Richtmyer-Meshkov instability with an adaptive central-upwind 6th-order WENO scheme	N.A. Adams/ V. Tritschler	Technische Univ. Muenchen, Germany
12.40-14.00	*Lunch*		

24 August 2011, Wednesday

Main Lecture Hall

Theme: High energy density physics

14.00-14.35	Review of the ablative Rayleigh-Taylor instability	Riccardo Betti	Princeton Plasma Physics Laboratory, USA; University of Rochester, USA
14.35-15.10	Experimental techniques for measuring the Rayleigh-Taylor instability in inertial confinement fusion	Vladimir A. Smalyuk	Lawrence Livermore National Laboratory, USA
15.10-15.45	Mix modeling for the ignition capsule design at the National Ignition Facility	D.S. Clark	Lawrence Livermore National Laboratory, USA
15.45-16.20	Magnetic field amplification associated with the Richtmyer-Meshkov Instability	Katsunobu Nishihara	Institute of Laser Engineering, Osaka, Japan

Themes: TMB themes

16.30-18.30 **Poster Session**

19.00-21.00 ***Banquet***

25 August 2011, Thursday

Main Lecture Hall

Themes: Non-equilibrium dynamics, Mathematical aspects

9.00-9.25	Mixing in a nano-scale film driven by convection	Markus Abel	U Potsdam, Germany
9.25-10.00	Mathematical analysis of Floquet problem as they arise in pipe/channel flows	Saleh Tanveer	Ohio State U, USA
10.00-10.30	*Coffee Break*		

Theme: High energy density physics

10.30-11.05	Progress toward turbulent experiments at high energy density	R. Paul Drake	U Michigan, Ann Arbor, USA
11.05-11.40	Supersonic jets and shocks in laboratory plasma experiments	Sergey V. Lebedev	Imperial College, UK
11.40-12.15	Magnetic field amplification from turbulent flows in core-collapse supernovae	Eirik Endeve	Oak Ridge National Laboratory, USA
12.15-12.40	Spike morphology in supernova-relevant hydrodynamics experiments	Carlo di Stefano	U Michigan, Ann Arbor, USA
12.40-14.00	*Lunch*		

25 August 2011, Thursday

Euler Lecture Hall

Course: Anisotropic Turbulence and Waves

Themes: Geophysics and Physics of Atmosphere

9.00-9.35	LES of full-depth Langmuir circulation and its impact on bottom boundary layer dynamics and scalar transport	Andres Tejada-Martinez	U South Florida, USA
9.35-10.10	Turbulent models for stratified flows	Eduard Son	Joint Inst. High Temperatures, Russia
10.10-10.30	*Coffee Break*		

Theme: Experiments, Turbulence, Combustion

10.30-11.00	Vortex-dipole chaos theory of turbulence	Helmut Baumert	IAMARIS e.V., Germany
11.00-11.20	Effect of shear on RT mixing layers at low Atwood numbers	Bhanesh Akula	Texas A & M University, USA
11.20-11.40	Scale-by-scale energy budget equations for the Mixing of a passive scalar by homogeneous turbulence	Michael Gauding	RWTH Aachen, Germany
11.40-12.10	Two-dimensional shearless turbulent mixing: kinetic energy self diffusion, also in the presence of a stable stratification	Daniela Tordella	Politecnico di Torino, Italy
12.10-12.30	Simulation of single-phase mixing in fuel rod bundles using an immersed boundary method	Florian Reiterer	Paul Scherrer Institute, Switzerland
12.30-14.00	*Lunch*		

25 August 2011, Thursday

Main Lecture Hall

Theme: Turbulence

14.00-14.35	Turbulent convection in the Sun	Katepalli R Sreenivasan	New York University, USA
14.35-15.00	Velocity and temperature decay in a near-wake region of a turbulent heated crossbar wake	N. Lefeuvre	University of Newcastle, Australia
15.00-15.30	Turbulent mixing in isotropic and anisotropic (axisymmetric) flows	Luminita Danaila	CORIA University of Rouen, France
15.30-16.05	Cascade of axisymmetric turbulence in a stably-stratified fluid	Claude Cambon	Ecole Centrale de Lyon, France
16.05-16.30	*Coffee Break*		

Themes: Interfacial dynamics, Turbulence and mixing

16.30-16.55	Effect of initial conditions on single and two-mode Rayleigh-Taylor Instability	Tie Wei	Los Alamos National Laboratory, USA
16.55-17.30	Nonlinear evolution of Rayleigh-Taylor instability in a finite domain	Snezhana I. Abarzhi	University of Chicago, USA
17.30-17.55	Anomalous scaling of passive scalars in rotating flows	Paola Rodriguez Imazio	Universidad de Buenos Aires, Argentina
17.55-18.30	Rotating turbulence and the return to isotropy	Annick Pouquet	National Center for Atmospheric Research, USA

26 August 2011, Friday

Main Lecture Hall

Theme: Experiments and diagnostics

9.00-9.30	First results from the variable density turbulence tunnel	Gregory Bewley	Max Planck Institute, Germany
9.30-10.05	The investigation of fluctuating liquid interfaces with X-ray surface scattering	Mark L. Schlossman	University of Illinois at Chicago, USA
10.05-10.30	*Coffee Break*		

Themes: Astrophysics, Mathematical aspects

10.30-11.00	Collaborative comparison of high-energy-density physics codes	Bruce Fryxell	U Michigan, Ann Arbor, USA
11.00-11.35	Transport statistics in stirred point-vortex flows	Mark Rast	University of Colorado
11.35-12.10	Dynamos and accretion disks in astrophysics: ask not 'is mean field theory correct?' but 'what is the correct mean field theory?'	Eric G. Blackman	U Rochester, USA
12.10-12.40	Role of turbulence in the formation of planets	Hubert Klahr	Max-Planck-Institute, Germany
12.40-14.00	*Lunch*		

26 August 2011, Friday

Euler Lecture Hall

Course: Anisotropic Turbulence and Waves

Themes: Geophysics and Physics of Atmosphere

9.00-9.35	Anisotropic geostrophic turbulence and convection in the laboratory, and in planetary atmospheres and oceans	Peter Read	University of Oxford, UK
9.35-10.00	The local dynamics of turbulence along streamlines	P. Schaefer	RWTH - Aachen, Germany
10.00-10.30	*Coffee Break*		

Themes: Turbulence, Non-equilibrium processes

10.30-10.55	The advection regime in turbulent convection across a horizontal permeable membrane	G. V. Rama Reddy / Baburaj A. Puthenveettil	BHEL Corporate R & D, India
10.55-11.15	Intermittency-like transport in porous media	Pietro de Anna	Université de Rennes, France
11.15-11.40	Statistical analysis of global wind dynamics in vigorous Rayleigh-Benard convection	Klaus Petschel	U Münster, Germany
11.40-12.05	In search of dominant free surface fluctuation frequency downstream of the oscillating hydraulic jump with the Bayesian spectral density approach	K.I. Hoi	University of Macau, China
12.05-12.30	Turbulent mixing in non-Newtonian fluids	A.N. Doludenko	Moscow Inst Physics & Technology, Russia
12.30-14.00	*Lunch*		

26 August 2011, Friday

Main Lecture Hall

Themes: Stochastic processes, Combustion, Wall-bounded flows

14.00-14.35	Nonlinear reaction-transport systems with memory effects: anomalous diffusion and fractional derivatives	Sergei Fedotov	The University of Manchester, UK
14.35-15.00	Vortex sheet model for a turbulent mixing layer	Ujjayan Paul	Jawaharlal Nehru Centre Adv. Scientific Research, India
15.00-15.30	Front propagation in anomalous diffusion-reaction systems	Alexander A. Nepomnyashchy	Northwestern U, USA; Technion, Israel
15.30-15.50	Logarithmic law and universal Karman constant in wall-bounded turbulent flows	You Wu	Peking University, China
15.50-16.20	Large eddy simulations for turbulent mixing and combustion	James Glimm	State U New York, Stony Brook, USA
16.30-18.30	**Round Table**		

26 August, Friday

Euler Lecture Hall

Course: Anisotropic Turbulence and Waves

Themes: Geophysics and Physics of Atmosphere

14.00-14.25	Diagnostic for evaluating the representation of turbulence in atmospheric models at kilometric scale.	V. Masson / R. Honnert	CNRM-GAME/ METEO, France
14.25-14.55	Mixing efficiency in natural flows	I. Lozovatsky	U Notre Dame, USA
14.55-15.20	Large-eddy stimulations of a turbulent Stokes-Ekman boundary layer	Stefano Salon	International Centre for Theoretical Physics, Italy
15.20-15.55	The URAPS closure for the normalized Reynolds stress	Charles A. Petty	Michigan State U, USA
15.55-16.25	The nature of zonal jets in geostrophic turbulence	R.K. Scott	University of St Andrews, UK
17.00-18.30	***Round Table***		

27 August, Saturday

Main Lecture Hall

Theme: Advanced numerical simulations

9.00-9.35	Incompressible Navier-Stokes and other new capabilities in FLASH-4	Anshu Dubey	U Chicago, USA
9.35-10.05	Direct numerical simulations of a spatially developing turbulent mixing layer	Antonio Attili	King Abdullah U Science & Tech, Saudi Arabia
10.05-10.30	*Coffee Break*		

Theme: Turbulence

10.30-11.05	Generation and detection of whistler wave-induced space plasma turbulence	Min-Chan Lee	Boston University & MIT, USA
11.05-11.40	Kelvin-wave turbulence in superfluids	Itamar Procaccia	Weizmann Institute of Science, Israel
11.40-12.10	Turbulence in photonic plasma	Jason Fleisher	Princeton University, USA
12.10-12.40	Statistics of multiple filamentation of strong optical turbulence	Pavel M. Lushnikov	University of New Mexico, USA
12.40-14.00	*Lunch*		

27 August, Saturday

Main Lecture Hall

Themes: Non-equilibrium processes, Stochastic processes

14.00-14.25	Multi-scale modeling of spinodal-decomposition-driven mixing	N. Hadjiconstantinou/ Dafne Molin	MIT, USA / Brescia U, Italy
14.25-15.00	Nonperturbative derivation of closed form hydrodynamics from kinetic theory	Ilya Staroselsky	Exa Corporation, USA
15.00-15.35	Turbulence and mixing characteristics in variable-density Rayleigh-Taylor mixing layer	Daniel Livescu	Los Alamos National Laboratory, USA
15.35-16.05	Nonlinear model for mixing layer growth of multimode Rayleigh-Taylor Instability	Bertrand Rollin	Los Alamos National Laboratory, USA
16.05-16.30	*Coffee Break*		

Themes: Material science, Wall-bounded flows, Geophysics

16.30-17.00	Equations of state and phase transformations of materials at high dynamic pressures	Konstantin V. Khishchenko	Joint Inst. High Temperatures, Russia
17.00-17.20	A theoretical study of the effect of polymer concentration on turbulent drag reduction	Chung Yin	The Chinese U of Hong Kong, Hong Kong
TBA	Summary	TMB Organizing Committee	
19.00-21.00	***Reception***		

28 August 2011, Sunday

Themes: ***Free Time, Organizing Committee Meeting***

Poster Presentations

P.*i.j.k; P is for poster, i is for number of theme, j is for number of poster within theme, k is for presentations on waiting list*

1. Canonical turbulence and turbulent mixing

P.1.1	Dynamics of reorientations and reversals of large scale flow in Rayleigh-Benard convection	Pankaj Kumar Mishra	Indian Institute of Technology at Kanpur, India
P.1.2	Decay of turbulence in rotating flows	T.Teitelbaum and P.Mininni	Universidad de Buenos Aires, Argentina
P.1.3.1	Compressible turbulence: the cascade and its locality	Hussein Aluie	Los Alamos National Laboratory, USA
P.1.3.2	Persistence of incomplete mixing: a key to anomalous transport	Tanguy Le Borgne (1), Marco Dentz (2)	Geosciences Rennes, France (1); CSIC Barcelona, Spain (2)
P.1.3.3	Laminar bubble chains: a logarithmically exact solution	A.V. Byalko	Landau Institute for Theoretical Physics, Russia
P.1.3.4	Alignment of dissipation elements in a turbulent channel flow	J.H. Goebbert, M. Gauding, N. Peters	Institute for Combustion Technology, RWTH - University of Aachen, Germany
P.1.3.5	Elastic-turbulence-induced melting of a nonequilibrium vortex crystal in a forced thin fluid film	Anupam Gupta and Rahul Pandit	Indian Institute of Science, Bangalore, India
P.1.3.6	Short-range spatial correlations in variable-density turbulence	G. Hazak	Nuclear Research Center at Negev, Israel
P.1.3.7	The advection regime in turbulent convection across a horizontal permeable membrane	Rama Reddy V. G. (1), Baburaj A. Puthenveettil (2)	BHEL Corporate R & D, Hyderabad, India (1); IIT Madras, India (2)
P.1.3.8	Dimensionality influence on the passive scalar transport observed through numerical	S.Di Savino, M. Iovieno, L.Ducasse,	Politecnico di Torino, Italy

	experiments on turbulence shearless mixings	D.Tordella	
P.1.3.9	Anomalous scaling, conformal symmetry and time scales in forced rotating turbulence	Amrik Sen (1, 2), Duane Rosenberg (1), Annick Pouquet (1)	National Center for Atmospheric Research, USA (1); University of Colorado, USA (2)

2. Wall–bounded flows

P.2.1	Effects of wall proximity on vortex shedding from a square cylinder	M. Raisee and H. Babaei	University of Tehran, Iran
P.2.2	The interaction of eigen and artificially imposed perturbations in a transitional boundary layer over oscillating surface	Ia.V. Zagumennyi, G.A. Voropayev	Institute for Hydromechanics of the National Academy of Sciences, Ukraine
P.2.3.1	Merging of sheet plumes in turbulent convection	G. S. Gunasegarane, Baburaj A. Puthenveetil	Indian Institute of Technology, Madras, India
P.2.3.2	The Stokes boundary layer on a cylinder oscillating around its axis in an unbounded fluid	Iervolino Michele (1), Pietro Scandura (2), Andrea Vacca (1)	Seconda Università di Napoli, Italy (1); Università di Catania, Italy (2)
P.2.3.3	Mirror-symmetric travelling-waves in wall-bounded shear flows	Masato Nagata	Kyoto University, Japan
P.2.3.4	A comparative study on drag reduction strategies in pipe flow	Ozan Tugluk, Hakan I. Tarman	Middle East Technical University, Turkey
P.2.3.5	Four flow regimes for self-similar turbulent boundary layer in pressure gradient	Igor Vigdorovich	Institute of Mechanics, Moscow State University, Russia

3. Non–equilibrium processes

P.3.1	Large- and small-scale structures in Richtmyer-Meshkov flows driven by strong shocks/ Inhomogeneities in Richtmyer-Meshkov -generated flow fields	Milos Stanic (1), Jason T. Cassibry (1), Robert F. Stellingwerf (2), C.C. Chou (3), Bruce J. Fryxell (3), Snezhana I. Abarzhi (4)	University of Alabama in Huntsville, USA (1); Stellingwerf Consulting, USA (2); University of Michigan, USA (3); University of Chicago, USA (4)
P.3.2	Numerical investigation of turbulent forced convection of a nanofluid between parallel plates under different thermal conditions	Masoud Ziaei-Rad	Shahrekord University, Iran
P.3.3	Stochastic modeling of statistically unsteady turbulent mixing	Ahmad Qamar, M. Cadjan, Snezhana I. Abarzhi	University of Chicago, Chicago, USA
P.3.4.1	Interaction of planar shock waves with 2D/3D random isotropic flows	C. Huete Ruiz de Lira (1), J. G. Wouchuk (1), A. L. Velikovich (2), B.Canaud (3)	Universidad de Castilla La Mancha - Ciudad Real, Spain (1); Naval Research Laboratory, USA (2); CEA, DAM, DIF, France (3)

4. Interfacial dynamics

P.4.1	Instabilities of flat and curved interfaces in the Rayleigh-Taylor and Richtmyer-Meshkov models	Rashid Bashir	Hazara University, Pakistan
P.4.2	Numerical modeling of contaminant transport in integrated two layer hydrological model	Senthil Gurusamy, Girija Jayaraman	Indian Institute of Technology, Delhi, India
P.4.3.1	The lives and times of Rayleigh-Taylor bubbles and spikes	P. Ramaprabhu	University of North Carolina

			at Charlotte, USA
P.4.3.2	Linear theory analysis of Richtmyer-Meshkov like flows	Juan Gustavo Wouchuk	Universidad de Castilla La Mancha - Ciudad Real, Spain

5. High energy density physics

P.5.1	Radiation hydrodynamics experiments at the National Ignition Facility	C.C. Kuranz (1), R.P. Drake (1), C.M. Huntington (1), H.-S. Park (2), B.A. Remington (2), A.R. Miles (2), T. Plewa (3)	University of Michigan, USA (1); Lawrence Livermore National Laboratory, USA (2); Florida State University, USA (3)
P.5.2	Effect of the driving waveform on the dynamic stabilization of ablative Rayleigh-Taylor instability	A. R. Piriz (1), L. Di Lucchio (1, 2), G.Rodriguez Prieto (2)	Universidad de Castilla-La Mancha - Ciudad Real, Spain (1); University of Bologna, Italy (2)
P.5.3.1	Laser foam targets for production of magnetized thermonuclear plasma	A.I. Lebo, P.V. Konash, I.G.Lebo	Technical university - MIREA, Russia
P.5.3.2	Rayleigh-Taylor instability in ablation fronts and its dynamic stabilization	A.R. Piriz, L.Di Lucchio, S.A. Piriz, G. Rodriguez Prieto, N.A. Tahir	Universidad de Castilla –La Mancha, Spain

6. Material science

P.6.1	Multi-sized nanoparticle effect on convective heat transfer in turbulent flows	Dinesh Kumar	JNCASR Bangalore, India

P.6.2	Mixing in thermal convection of very thin freestanding films	Michael Winkler, Markus Abel	Institute of Physics and Astronomy of the University of Potsdam, Germany
P.6.3.1	Estimation of spectral characteristics of particles ejected from free surfaces of metals and liquids under shock wave effect	A.B. Georgievskaya, V.A. Raevsky	Russian Federal Nuclear Center - VNIIEF, Russia

7. Astrophysics

P.7.1	Simulations of convective layer of the Sun using the kε-model	S.A. Baban, D.A. Gryaznykh, N.G. Karlykhanov, V.A. Simonenko, M.S. Timakova	Russian Federal Nuclear Center - VNIITF, Russia
P.7.2	Turbulence and fossil turbulence lead to life in the universe	Carl H. Gibson	University of California, San Diego, USA
P.7.3	The role of the magnetic field in the evolution of the stellar rotation of young low mass stars	Mauricio Vargas, Giovanni Pinzon	Universidad Nacional de Colombia, Colombia
P.7.4.1	Double-Diffusive Mixing-Length Theory, semiconvection, and massive star evolution	Tangoh Dean and Bessem	Research Institute Calabar Nigeria & CEPS, Cameroon
P.7.4.2	Formation and growth of hydrodynamic instabilities during the evolution of Supernova remnants	Vikram Dwarkadas	University of Chicago, USA
P.7.4.3	Turbulent magneto-convection, vortex tubes, and self-organization of solar plasma	I.N. Kitiashvili (1), A.G. Kosovichev (1), N.N. Mansour (2), A.A. Wray (2)	Stanford University, USA (1); NASA Ames Research Center, USA (2)

8. Magnetohydrodynamics

P.8.1.1	Turbulent experimental dynamos: from liquid metal to plasmas	Cary Forest	University of Wisconsin, Madison, USA
P.8.1.2	Simple waves and Riemann problem in magnetohydrodynamic flows in shallow water approximation	K.V. Karelsky (1), A.S. Petrosyan (1), S.V. Tarasevich (1, 2)	Space Research Institute of the Russian Academy of Sciences (1); Lomonosov Moscow State University, Russia (2)
P.8.1.3	Existence, uniqueness, analyticity and Borel summability of magneto-hydrodynamic and Boussinesq equations	Saleh Tanveer	The Ohio State University, USA

9. Canonical plasmas

P.9.1	Experimental simulation of auroral current systems	C. M. Cooper, W. Gekelman	University of California, Los Angeles, USA
P.9.2	Investigation of acoustic gravity waves created by anomalous heat sources: experiments and theoretical analysis	R. Pradipta (1), M.C. Lee (1,2), D. A. Dahlbom (2), K.P. Hu (2), E.J. Markwith (2), A.J. Tooke (2), L.A. Rooker (2), B.J. Watkins (3)	Massachusetts Institute of Technology, USA (1); Boston University, USA (2); University of Alaska, Fairbanks, USA (3)
P.9.3	Multi-diagnosis of large plasma sheets and geomagnetic field fluctuations excited concomitantly by injected radio waves	R. Pradipta (1), M.C. Lee (1,2), J.A. Cohen (2), J.E. Gancarz (2), A.A. Yang (2), D.A. Dahlbom (2), L.A. Rooker (2), E.J. Markwith (2), A.J. Tooke (2) K.P. Hu (2), J. Morton (3), B.J. Watkins (4), C. Fallen (4), S.P. Kuo (5)	Massachusetts Institute of Technology, USA (1); Boston University, USA (2); Miami University, USA (3); University of Alaska, USA (4); New York University, USA (5)

P.9.4.1	Stochastic diffusion of ultracold gases and plasmas stimulated by the magnetic field	Yurii V. Dumin	IZMIRAN of the Russian Academy of Sciences, Russia
P.9.4.2	Nonlocality in turbulent transport of fusion plasmas	T.S. Hahm, P.H. Diamond, W.Wang, G. Dif-Pradalier	Seoul National University, South Korea
P.9.4.3	Electrostatic solitary wave experiments in the LArge Plasma Device (LAPD)	Bertrand Lefebvre (1), Li-Jen Chen (1), Walter Gekelman (2)	University of New Hampshire, USA (1); University of California, Los Angeles, USA (2)
P.9.4.4	Exponential frequency spectra and Lorentzian pulses in magnetized plasmas	D.C. Pace	Oak Ridge Institute for Science and Education, USA
P.9.4.5	Fast-framing camera and probe measurements of intermittent turbulence and nonlinear structures in a linear, magnetized plasma	S. Vincena, T. Carter, W. Gekelman, D. Schaffner, D. Guice, & G. Rossi	University of California, Los Angeles, USA

10. Physics of atmosphere

P.10.1	There is no responsibility of Coriolis force	Y. Bazarov, M. Golubev	RFNC-VNIIEF, Russia
P.10.2	Flow rate in tornado and tornado –‘ghost’	B.Bazarov (3), Y.Bazarov (1, 2), M.Golubev (1), E.Meshkov (2)	FSUE RFNC-VNIIEF, Sarov, Russia (1); Hydrodynamics Laboratory, Sarov FTI, Sarov, Russia (2); Gymnasia №2 in Sarov, Russia (3)
P.10.3	Bath-tube vortex attenuation at water level increase in the vessel	E.E. Meshkov (1), A.A. Sirotkin (2), D.N. Zamyslov (1)	Sarov PhTI NRNU “MEPhI”,

			Russia (1); MEI "Lyceum №3" in Sarov, Russia (2)
P.10.4.1	Turbulent entrainment and mixing in steady cloud-like jet and plume flows	Sourabh S. Diwan, Roddam Narasimha	Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
P.10.4.2	Inhomogeneous closure theory and applications	Jorgen S. Frederiksen	CSIRO Marine and Atmospheric Research, Australia

11. Geophysics and Earth sciences

P.11.1	Lithospheric-Plume interaction beneath Mt. Cameroon volcano, West Africa	Herbert E, Elsevier, Kidlington, Asili	Ekona Research Center /Mt.Cameroon Volcanic studies, Cameroon
P.11.2	Wind-driven turbulence and sediment re-suspension in shallow lakes	Justin Pringle	University of Kwa-Zulu Natal, South Africa
P.11.3.1	Parameterization of eddies in a simple model of the extratropical tropospheric circulation	Gavin Esler	University College London, United Kingdom
P.11.3.2	The influence of turbulence on the equilibrium floc size and settling velocity of estuarine macroflocs	Christopher Mark Maine	University of Kwa-Zulu Natal, South Africa

12. Combustion

P.12.1	Numerical simulation of the hot spot growth in detonation with regard to the turbulent	I.I. Karpenko, V.G. Morozov, Yu.V. Yanilkin, O.N.	RFNC-VNIIEF, Sarov, Russia

	mechanism of energy transfer	Chernyshova	
P.12.2	Transformation of flying cylindrical water shell model	E.E.Meshkov (1), V.O.Oreshkov (2), Ya.V.Fedorenko (2), G.M.Yanbaev (2)	Sarov PhTI NRNU "MEPhI", Russia (1); MEI "Lyceum №15" in Sarov, Russia (2)
P.12.3	Factorized cumulant expansion approximation method for turbulence with reacting and mixing chemical elements of type A+B → Product	M.C. Meshram	Rashtrasant Tukadoji Maharaj Nagpur University, India
P.12.4	Properties of micromixing model on an averaged chemical reaction in a turbulent flow	Akhtar Munir	Hazara University, Pakistan
P.12.5	Turbulent mixing in the plane liquid jet with the second-order chemical reaction	Tomoaki Watanabe, Yasuhiko Sakai, Kouji Nagata, Osamu Terashima	Nagoya University, Japan
P.12.6.1	Flame acceleration and onset of detonation in channels	M.F. Ivanov, A.D. Kiverin	Joint Institute for High Temperatures of the Russian Academy of Sciences, Russia
P.12.6.2	Vortex dynamics in two-dimensional variable-density turbulent mixing	Laurent Joly	Université de Toulouse, France
P.12.6.3	Mechanisms of detonation formation	A.D. Kiverin, M.F. Ivanov	Joint Institute for High Temperatures of the Russian Academy of Sciences, Russia

13. Mathematical aspects of non–equilibrium dynamics

P.13.1.1	Stretching and folding in stratified Euler/Navier-Stokes equations	J. D. Gibbon	Imperial College London, United Kingdom

P.13.1.2	A novel model of spin-down of solar type stars	E Kim and N Leprovost	The University of Sheffield, United Kingdom
P.13.1.3	Theory of wind-driven sea	Vladimir Zakharov	University of Arizona, Tucson, USA; Novosibirsk State University, Russia

14. Advanced numerical simulations

P.14.1	Numerical study of instability between two cylinders in the case of 2D flow	Vladimir Denisenko, Elena Oparina	Institute for Computer Aided Design of the Russian Academy of Sciences, Russia
P.14.2	On vortex tube temperature separation effect	I. V. Eriklintsev, S. A. Kozlov	Institute for Computer Aided Design of the Russian Academy of Sciences, Russia
P.14.3	Investigation of spectrum characteristics of the vortex cascades in shear flow.	S.V. Fortova	Institute for Computer Aided Design of the Russian Academy of Sciences, Russia
P.14.4	Application of turbulent mixing flows: Rayleigh-Taylor instability	Tulin Kaman (1), James Glimm (2), David H. Sharp (3)	State University of New York at Stony Brook, USA (1), Brookhaven National Laboratory, USA (2); Los Alamos National Laboratory, USA (3)
P.14.5	Numerical simulations of countercurrent flow in a	S.A. Kozlov, E.V. Eriklintsev	Institute for Computer Aided

	separating gas centrifuge		Design of the Russian Academy of Sciences, Russia
P.14.6.1	Two-dimensional turbulence: where do we stand?	Robert Ecke	Center for Nonlinear Studies, Los Alamos National Laboratory, USA
P.14.6.2	Hydrodynamic instability theory of the causes and projections of climate change	Jorgen S. Frederiksen	CSIRO Marine and Atmospheric Research, Australia
P.14.6.3	Comparison of turbulence models for hydrodynamic study of forward facing step using open FOAM	Jayakumar J. S	Amrita Vishwa Vidyapeetham, India
P.14.6.4	Dimensionality influence on the passive scalar transport observed through numerical experiments on turbulence shearless mixings.	S.Di Savino, M.Iovieno, L.Ducasse, D.Tordella	Politecnico di Torino, Italy

15. Stochastic processes and probabilistic description

P.15.1.1	Statistical dynamical and stochastic subgrid modeling for geophysical flows	Jorgen S. Frederiksen	CSIRO Marine and Atmospheric Research, Australia
P.15.1.2	Stochastic modeling of turbulent condensation	Roberto Paoli, (1), K. Shariff (2)	CERFACS, France (1); NASA Ames Research Center, USA(2)

16. Experiments and experimental diagnostics

P.16.1	Investigation of the mechanisms of microparticles cloud formation by shock wave arrival on condensed matter free surface	Yu.B. Bazarov, V.K. Baranov, A.B. Georgievskaya, A.G. Golubinsky, E.E. Meshkov, S.N.	Russian Federal Nuclear Center - VNIIEF, Russia

		Stepushkin, A.Yu. Syundyukov, V.Yu. Khatunkin	
P.16.2	Laboratory models for hydrodynamic instability investigation	A.B. Georgievskaya (1), E.E. Meshkov (2), L.L. Ogorodnikov (3), A.D. Shamshin (2), I.A. Yurina (1)	Russian Federal Nuclear Center - VNIIEF, Russia (1); Sarov PTI NRNU "Mephi", Russia (2); MEI "Lyceum №3" in Sarov, Russia (3)
P.16.3	Effect of initial conditions on Rayleigh-Taylor mixing: wavelength interaction	Sarat C Kuchibhatla, Jacob A McFarland, Bhanesh Akula, Devesh Ranjan	Texas A&M University, USA
P.16.4	Transformation of flying cylindrical water shell model	E.E.Meshkov (1), V.O.Oreshkov (2), Ya.V.Fedorenko (2), G.M.Yanbaev (2)	Sarov PhTI NRNU "MEPhI", Russia (1); MEI "Lyceum №15" in Sarov, Russia (2)
P.16.5	Microscopic electron-optical recording of particle ejecta from free surface of shock-loaded lead	N.V. Nevmerzhitskiy, A.L. Mikhailov, V.A. Raevsky, V.S. Sasik, Yu.M. Makarov, E.A. Sotskov, A.V. Rudnev, V.V. Burtsev, S.A. Lobastov, A.A. Nikulin, E.D. Senkovsky, S.A. Abakumov, O.L. Krivonos, A.A. Polovnikov	Russian Federal Nuclear Center All-Russia Research Institute of Experimental Physics, Russia
P.16.6	Local perturbation growth on gas-liquid interface at Rayleigh-Taylor instability	N.V. Nevmerzhitskiy, E.A. Sotskov, E.D. Senkovsky, O.L. Krivonos, A.V.Kalmanov, A.A. Polovnikov, E.V. Levkina, V.V.Marmyshev, S.V.Frolov,	Russian Federal Nuclear Center All-Russia Research Institute of Experimental Physics, Sarov, Russia

		S.A.Abakumov	
P.16.7	Experimental study of gas-bubble evolution on single exposure to variable pressure field	A.V. Pavlenko, O.E. Shestachenko, A.A. Tyaktev, Yu.A. Piskunov, V.N. Popov, I.L. Bugaenko, E.V. Sviridov, A.M. Andreev, A.I. Baishev, V.M. Medvedev	Russian Federal Nuclear Center - Zababakhin All-Russia Research Institute of Technical Physics, Russia
P.16.8	Experimental apparatus to investigate gas-filled bubbles in liquids	A.V. Pavlenko, S.I. Balabin, O.E. Shestachenko, O.E. Kozelkov, A.A. Tyaktev, V.N. Popov	Russian Federal Nuclear Center - Zababakhin All-Russia Research Institute of Technical Physics, Russia
P.16.9	Static and dynamic testing of apparatus to study scale effects of gas-filled bubbles	A.V. Pavlenko, A.A. Tyaktev, V.N. Popov, I.L. Bugaenko, D.V. Neuvazhayev	Russian Federal Nuclear Center - Zababakhin All-Russia Research Institute of Technical Physics, Russia
P.16.10	PLIF analysis on the fractal dimension of high-Schmidt number scalar mixing in fractal-generated turbulence	Hiroki Suzuki, Yasuhiko Sakai, Kouji Nagata	Nagoya University, Japan
P.16.11.1	Some peculiar features of hydrodynamic instability development	E.E. Meshkov	Sarov PhTI NRNU MEPhI, Russia
P.16.11.2	Some peculiarities of turbulent mixing growth and perturbations at hydrodynamic instabilities	N.V. Nevmerzhitskiy	Russian Federal nuclear Center All-Russian Research Institute of Experimental Physics, Russia

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