



Turbulent Mixing and Beyond

Sixth International Conference

Tenth Anniversary Program

PROGRAM

14 - 18 August, 2017

the Abdus Salam International Centre for Theoretical Physics

Strada Costiera 11, Trieste, Italy

Tel: +39-040-2240-9932; Fax: +39-040-2240-7932

E-mail: smr3141@ictp.it, tmb@ictp.it, tmb.program@gmail.com

<http://www.ictp.it/~tmb/>, <http://tmbw.org>

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When?

Routine

9.00 – 10.00	lectures, talks
10.00 – 10.30	<i>coffee break</i>
10.30 – 12.30	lectures, talks
12.30 – 14.00	<i>lunch</i>
14.00 – 16.00	lectures, talks
16.00 – 16.30	<i>coffee break</i>
16.30 – 18.30	lectures, talks

Parallel sessions

14 August 2017	Monday	14.00-16.20
15 August 2017	Tuesday	9.00-10.15, 10.30-12.50, 14.00-16.20
16 August 2017	Wednesday	9.00-10.20, 10.30-12.45, 15.00-16.10
17 August 2017	Thursday	9.00-10.20, 10.30 – 12.30, 14.00-16.20
18 August 2017	Friday	9.00-10.05, 10.30 – 12.50

Poster session

15 August 2017	Tuesday	17.30 – 19.00
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Round Tables

17 August 2017	Thursday	17.30 – 19.00
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TMB4U presentations

14 August 2017	Monday	14.00-16.20
15 August 2017	Tuesday	14.00-16.20, 17.30-19.00
16 August 2017	Wednesday	9.00-10.20, 16.30-18.40
17 August 2017	Thursday	9.00-10.20, 14.00-16.20
18 August 2017	Friday	10.30 – 12.50

Where?

Leonardo da Vinci (Main) Building

Lectures, Talks	Budinich (Main) Lecture Hall
Lectures, Talks	Euler Lecture Hall
Poster Sessions	Poster Hall, nearby Budinich Lecture Hall
Round Tables	Oppenheimer Room
Computer/Internet	Computer rooms, wireless

Coffee, Receptions, Banquet

Coffee Breaks on 14 Aug - 18 Aug at 10.00-10.30 & 16.00-16.30 near Budinich Lecture Hall

Receptions on 13 Aug at 19.00-21.00 & 18 Aug at 19.00 – 21.00 at Adriatico Guest House

Banquet on 16 Aug Wed at 19.00 – 21.00 at Adriatico Guest House

13 August 2017, Sunday

ADRIATICO GUEST HOUSE

18.00-19.00 Organizing Committee meeting

14 August 2017, Monday

BUDINICH LECTURE HALL

- M1.1 Non-equilibrium processes
Chair Abarzhi SI
9.00-9.35 TMB-2017 Introduction
Abarzhi SI
9.35-10.10 Intermittent many-body dynamics at equilibrium
Campbell DK
- M2.1 High energy density physics
Chair Gauthier S
10.30-11.05 Vorticity and kinetic energy in Richtmyer-Meshkov like flows
Wouchuk JG
11.05-11.40 High energy density turbulent mixing from astrophysical collisionless plasma
flows to solid-density plastic flow in metals
Park HS
11.40-12.15 Novel regimes of hydrodynamic instabilities and mixing in high energy
density settings
Remington BA
12.15-12.50 Scale coupling in strong shock driven Richtmyer-Meshkov flows
Abarzhi SI
- M3.1 Non-equilibrium processes, Turbulence, Magneto-hydrodynamics
Chair Yoshida Z
14.00-14.35 Dynamics of the vortex line density in anisotropic superfluid turbulence
Procaccia I
14.35-15.10 Instability and fragmentation of liquid jets: molecular dynamics and smoothed
particle hydrodynamics simulations
Zhakhovsky VV
15.10-15.45 Is helicity everywhere or nowhere? The case of rotating stratified
magnetohydrodynamic turbulence
Cambon C
15.45-16.20 Non-stationary turbulent energy cascade in the framework of scaling
symmetry approach
Gorokhovski MA
- M4.1 Non-equilibrium processes, Plasmas
Chair Sydora R
16.30-17.00 Slow, fast and ultra-fast components of ordered structures in fluid flows
Chashechkin YD
17.00-17.30 Similarity of anisotropic, variable viscosity flows
Danaila L
17.30-18.00 Nonlinear interactions of kink-unstable flux ropes and shear Alfvén waves:
creating smaller-scale structures from larger ones
Vincena ST
18.00-18.30 Turbulence spreading and avalanche dynamics in fusion plasmas
Hahn TS

14 August 2017, Monday

EULER LECTURE HALL

- M3.2 Mathematical aspects, Combustion, Interfacial dynamics
TMB4U
- Chair Tanveer
- 14.00-14.20 Dissipation element analysis of premixed and non-premixed turbulent flames
Attili A
- 14.20-14.40 A fully homogenized model for a non-equilibrium two-phase flow in double porosity media with thin fissures
Voloshin A
- 14.40-15.00 Exact time-dependent solution to the Euler-Helmholtz and Riemann-Hopf equations
Chefranov AS
- 15.00-15.20 Development and validation of a five-equation multicomponent model with viscous, thermal and species diffusion
Groom M
- 15.20-15.40 What is the final size of turbulent mixing zones driven by the Faraday instability?
Grea BJ
- 15.40-16.00 Effect of noise on Rayleigh-Taylor mixing with space-dependent acceleration
Pandian A
- 16.00-16.20 Convective thermal fluxes in unsteady non-homogenous flows
Tellez J

15 August 2017, Tuesday

BUDINICH LECTURE HALL

- T1.1 Magneto-hydrodynamics, Physics of atmosphere
Chair Knobloch E
9.00-9.35 Heat transfer enhancement in liquid metal targets by rotating magnetic field
 Sukoriansky S
9.35-10.10 Turbulence in rotating fluids and the Nastrom & Gage spectrum
 Galperin B
- T2.1 Astrophysics, High energy density physics
Chair Cambon C
10.30-11.00 Cascades and scaling in two-dimensional compressible turbulence
 Kritsuk A
11.00-11.30 Primordial magneto-hydrodynamic turbulence and its signatures
 Kahniashvili T
11.30-12.00 Mixing as relaxation
 Williams RJR
12.00-12.30 On the multidimensional character of core-collapse supernova explosions
 Endeve E
12.30-12.50 Effect of large-scale vorticity perturbations on shocks undergoing nuclear
 dissociation
 Huete C
- T3.1 Non-equilibrium processes, Turbulence and mixing
Chair Gorokhovski M
14.00-14.35 Understanding turbulence from a kinetic theory perspective
 Chen H
14.35-15.10 Turbulence and mixing in thermal convection
 Verma MK
15.10-15.45 Intermittency effects on passive scalar spectrum at very high Schmidt number
 Gotoh T
15.45-16.10 Non-Richardson scaling laws in turbulent particle pair diffusion
 Malik NA
- T4.1.1 Geophysics
Chair Galperin B
16.30-17.05 Circulation in the atmospheres of gas giant planets and in the Earth's outer
 core due to small-scale convection
 Afanasyev YD
17.05-17.40 Geostrophic turbulence and the formation of large scale structure
 Knobloch E
- T4.1.2 Poster Session
17.30-19.00 Posters in TMB themes

15 August 2017, Tuesday

EULER LECTURE HALL

T1.2	Material science, Mathematical aspects
Chair	Fukumoto Y
9.00-9.20	Shock compressibility of two-phase liquid-vapor mixture of metals at high temperatures Khishchenko KV
9.20-9.40	Analytical solutions for the nonlinear regime of the Rayleigh-Taylor and Richtmyer-Meshkov instabilities at arbitrary Atwood number Bouquet SE
9.40-10.10	Laws of the wall for velocity and temperature in supersonic turbulent boundary layers Vigdorovich II
T2.2	Magneto-hydrodynamics, Physics of atmosphere, Geophysics
Chair	Chashechkin Y
10.30-10.55	Evolution of Structures during electric explosion of conductors Tkachenko SI
10.55-11.20	Analysis of flow structural elements around obstacles in thermodynamically non-equilibrium media Zagumennyi IV
11.20-11.45	Towards a solution of the closure problem for convective atmospheric boundary layer turbulence Gryanik VM
11.45-12.10	Filtration by porous media: the role of flow disorder Miele F
12.10-12.30	Large eddy simulation of a marine turbine in a stable stratified flow condition Brunetti A
12.30-12.50	Mixing and entrainment in variable viscosity and density round jet Danaila L
T3.2	Wall-bounded flows, Physics of atmosphere, Geophysics, MHD
Chair	Klewicki J
14.00-14.20	On coherent structures in a turbulent mixing layer created downstream of a "Lambda" notch Suehiro E
14.20-14.40	On cascade reversal in extended MHD Miloshevich G
14.40-15.00	Linear analysis of magneto-hydrodynamic Richtmyer-Meshkov instability in converging geometry Bakhsh A
15.00-15.20	Single-particle dispersion in stably stratified turbulence Sujovolsky NE
15.20-15.40	Helicity distribution in a convective vortical flows Evgrafova AV
15.40-16.00	Simulation of turbulence mixing in atmosphere boundary layer and fractal dimension Strijhak S
16.00-16.20	Gas flow in unconventional gas reservoirs using space fractional transport models Ali I

16 August 2017, Wednesday

BUDINICH LECTURE HALL

- W1.1 Wall-bounded and shear flows, Turbulence and mixing
Chair Gotoh T
9.00-9.25 Turbulent flow in the bulk of thermal convection: comparison of smooth and different roughness boundaries
Foroozani N
9.25-10.00 Mean equation based scaling analysis of fully-developed turbulent channel flow with uniform heat generation
Klewicki JC
- W2.1 Stochastic processes
Chair Danaila L
10.30-11.05 Symbolic approaches to characterize complex dynamics
Small M
11.05-11.40 Anomalous super-diffusive transport and Levy walks
Fedotov S
11.40-12.15 A comparison of realizable and regularized Markovian and non-Markovian inhomogeneous turbulence closures with ensemble averaged direct numerical simulations for general geophysical flows far from equilibrium.
O'Kane TJ
12.15-12.45 Multi-level segment analysis and the applications in fluid turbulence
Wang L
- W3.1.1 Turbulence and mixing
Chair Meshkov E
14.00-15.00 Ten years of the TMB program
Sreenivasan KR
- W3.1.2 Turbulence and mixing, Interfacial dynamics
Chair Nishihara K
15.00-15.35 On the structure of the Rayleigh-Taylor Mixing zone
Meshkov EE
15.35-16.10 On the fundamentals of Rayleigh-Taylor mixing driven by variable acceleration
Abarzhi SI
- W4.1 Interfacial dynamics, Magneto-hydrodynamics, Non-equilibrium processes
Chair Klimenko A
16.30-17.05 Current-vortex sheet dynamics in magneto-hydrodynamic flows
Matsuoka C
17.05-17.30 Singularity formation in gas-dynamic and fast magneto-hydrodynamic shocks
Pullin DI
17.30-17.55 Stability and structure of fields of a flow with a hydrodynamic discontinuity
Ilyin D TMB4U
17.55-18.20 Anomalous diffusion in laminar flows
Zaks MA
18.20-18.40 Internal intermittency and finite Reynolds number effect for turbulent mixing of passive and active scalars
Danaila L

16 August 2017, Wednesday

EULER LECTURE HALL

- W1.2 Material science, Non-equilibrium processes, Mathematical aspects
TMB4U
Chair Belic M
9.00-9.20 Massively parallel Smoothed Particle Hydrodynamics modeling of shock-
loaded spherical particles
Egorova MS
9.20-9.40 Dynamics of turbulent melting from below driven by thermal convection
Rabbanipour EB
9.40-10.00 Phase field model for immiscible two phase flow in microfluidic junctions
Hafsi Z
10.00-10.20 The dynamics of selfish flocks
Algar SD
- W2.2 Turbulence and mixing, Combustion, Stochastic processes
Chair Grinstein F
10.30-10.55 Passive scalar transport by a non-Gaussian turbulent flow (Batchelor regime)
Sirota VA
10.55-11.20 Transition from direct to inverse energy cascade in three dimensional
turbulence
Sahoo G
11.20-11.40 Reynolds stress closure for the RANS-equation
Petty CA
11.40-12.00 Simulation of a Richtmyer-Meshkov turbulent mixing zone using a Probability
Density Function model
Guillois F
12.00-12.20 Rayleigh-Taylor unstable flames: connecting local and global properties
Hicks EP
12.20-12.45 Processes formation of microporosity at initial stage of phase transition
Zmievszkaya GI
- W3.2.2 Numerical modeling
Chair Vasiliev O
15.00-15.25 A numerical study of decay of vortex rings in confined domains
Sooraj R
15.25-15.50 Comparison of conjugate heat transfer in forward facing step using various
turbulence models, considering variable thermophysical properties of the
working fluid
Jayakumar JS
15.50-16.10 Blended and nudged Navier-Stokes equations
Germano M

17 August 2017, Thursday

BUDINICH LECTURE HALL

- R4.1 High energy density physics
Chair McKee G
9.00-9.35 Interfacial magnetohydrodynamic instabilities in laser plasmas
Sano T
9.35-10.10 Collisionless shocks in the Large Plasma Device
Niemann C
- R2.1 Plasmas
Chair Azechi
10.30-11.05 Ohms law and the collision of magnetic flux ropes
Gekelman W
11.05-11.40 The dynamics of 2D turbulence in magnetically confined tokamak plasmas
and statistical properties of the resulting transport
McKee G
11.40-12.10 Turbulent thermal mixing in multiple interacting magnetised electron
temperature filaments
Sydora RD
12.10-12.40 Hydrodynamic instability as consequence of laser action
Inogamov NA
- R3.1 Mathematical aspects, high energy density physics
Chair Fedotov S
14.00-14.35 Quasi solution method in a vortex dynamics problem
Tanveer S
14.35-15.05 Remarks on the Clebsch representation of fluid mechanics and turbulence
Yoshida Z
15.05-15.40 The arrow of time and extending conventional thermodynamics from matter to
antimatter
Klimenko AY
15.40-16.10 Rogue waves and Talbot carpets: Dynamics driven by modulation instability
Belic MR
- R4.1.1 High energy density physics
Chair Park H-S
16.30-17.05 Internal Capsule Defects Quenching Thermonuclear Ignition
Azechi H
17.05-17.40 Gyroscopic analogy of Coriolis effect for stabilizing a rotating stratified flow
confined in a spheroid
Fukumoto Y

OPPENHEIMER ROOM

- R4.1.2 Round Tables
Chair Abarzhi SI
17.40-19.00 Round Table

17 August 2017, Thursday

EULER LECTURE HALL

- R1.2 Interfacial dynamics, Non-equilibrium processes, Combustion TMB4U
Chair Matsuoka C
9.00-9.20 Evolution of the linear Richtmyer-Meshkov instability when a shock/ rarefaction is reflected
Cobos-Campos F
9.20-9.40 Simulation of Richtmyer-Meshkov instability in the presence of thermal fluctuations using fluctuating hydrodynamics
Narayanan K
9.40-10.00 Particle clustering and turbophoresis in elastic turbulent flow
Garg H
10.00-10.20 Mathematical modeling of adiabatic shear bands formation under dynamical loading
Ilnitsky D
- R2.2 Stochastic processes, Geophysics, Wall-bounded flows
Chair Small M
10.30-10.55 Stochastic subgrid models for inertial particles dynamics in a highly turbulent flow
Gorokhovski M
10.55-11.20 Localization of convective currents under frozen parametric disorder and eddy transport of passive scalar
Goldobin DS
11.20-11.45 A reduced model for salt-finger convection in the small diffusivity ratio limit
Xie JH
11.45-12.05 Large eddy simulation of turbulent flow in a sharp meander bend
Campomaggiore F
12.05-12.30 Turbulent flows in ducts of arbitrary shape
Orlandi P
- R3.2 Experiments, Interfacial dynamics, Turbulence, Combustion TMB4U
Chair Golub V
14.00-14.35 Physical characteristics determination of the products of the shock wave-induced surface destruction. Optoheterodyne Doppler measurements.
Kuratov SE
14.35-14.35 Ejecta produced by Richtmyer-Meshkov instability from free metal surfaces
Dyachkov SA
14.35-15.00 Stochastic model of turbulent mixing layer and its use for explanation of peculiarities of aerodynamic noise generated by turbulent jet
Kopiev VF
15.00-15.20 Instabilities and mixing in internal waves attractors
Sibgatullin I
15.20-15.40 Interaction between shock wave and turbulent wake
Inokuma K
15.40-16.00 Modeling of turbulent flow through the ejector of a two-stage ejector refrigeration system
Ziaei-Rad M
16.00-16.20 Numerical investigation of turbulent flow through cooling channels
Saedan M

18 August 2017, Friday

BUDINICH LECTURE HALL

- F1.1 Combustion
Chair Inogamov N
9.00-9.35 The description of the acceleration of the spherically expanding hydrogen/air flames
Golub VV
9.35-10.00 Analysis of high Atwood number Rayleigh-Taylor mixing using low-Mach number, variable density/viscosity, non-dissipative LES algorithm
Yilmaz I
- F2.1 Numerical modeling
Chair Williams R
10.30-11.05 Coarse grained simulation of turbulent material mixing
Grinstein F
11.05-11.40 Rayleigh-Taylor turbulent mixing layers for miscible Newtonian fluids from Boussinesq approximation to fully compressible Navier–Stokes model
Gauthier S
11.40-12.15 Hierarchical wavelet-based modeling of turbulent flows
Vasilyev OV
12.15-12.50 Turbulence and scaling in high performance computing
Yeung PK
- F3.1 Experiments, Stochastic processes, interfacial dynamics
Chair Niemann C
14.00-14.30 Dynamics of singularities, wavebreaking and turbulence in 2D hydrodynamics with free surface
Lushnikov PM
14.30-15.00 Richtmyer-Meshkov shock induced fractal mixing
Redondo JM
15.00-15.30 Hydrodynamic instabilities
Abarzhi SI
- F4.1 Conclusion and Summary
Chair Abarzhi SI
15.30-16.00 Summary
Abarzhi SI
- 16.30-18.00 Organizing Committee meeting

18 August 2017, Friday

EULER LECTURE HALL

- F1.2 Material science, Non-equilibrium dynamics
Chair Zhakhovsky V
9.00-9.25 Instability of the contact discontinuity in the presence of density perturbations
 Gorodnichev KE
9.25-9.45 Hydrodynamics of nanofilms with melting and re-crystallization non-
 equilibrium phase transitions of the first order under action of laser pulse
 Inogamov NA
9.45-10.05 Influence of time-delayed reaction on stability and transition to self-oscillating
 mode of multiphase flow in porous medium
 Konyukhov AV
- F2.2 Wall-bounded flows, Physics of atmosphere, Numerical modeling
 TMB4U
Chair Sukoriansky S
10.30-10.50 Entrainment and scalar mixing process near turbulent/non-turbulent interface
 in compressible boundary layers
 Zhang X
10.50-11.10 Compressibility effects on initial evolution of mixing layers
 Arun S
11.10-11.30 Lagrangian coherent structures resulting from three-dimensional axial vortex
 breakdown
 Manjul S
11.30-11.50 Large-eddy simulations of turbulent flow past the Aerospatiale A-airfoil at
 high Reynolds number
 Gao W
11.50-12.10 On sheared wind-driven air-shallow water turbulent boundary layers using
 LES
 Lopez CS
12.10-12.30 DNS of lid rotating Rayleigh Benard convection
 Vishnu R
12.30-12.50 Computer simulation of the initial stage of condensation with the
 fragmentation of charged melt drops
 Maslennikov SA

15 August 2017, Tuesday

POSTER HALL

T4.1.2 Poster Session
17.30-19.00 Posters in TMB themes

N	Title	Author(s)
1	Cosmological evidence that the turbulence problem is solved	Gibson CH
2	Propulsion generated by diffusion-induced flows on a plate and a wedge	Chashechkin YD ; Zagumennyi IV ; Dimitrieva NF
3	Determination of size and concentration of water droplets in experiments with Wilson chamber	Goncharov E; Bazarov M
4	Computational fluid dynamics modeling and simulation of combustion dynamics in a coal gasification process	Ahsan M; Hussain B; Hussain A
5	Investigating flame length and time scales and flame response to oscillations using TARDIS with realistic chemistry	Malik NA
6	Contribution to experimental and numerical study of a full developed fire in an enclosure, with emphasis on flashover phenomenon	Mouangue RM; Onguene MP; Ekobena FHP
7	Large-eddy simulation of mild flame in non-premixed bluff-body burner	Zhang J; Yang T
8	Three-wave resonance in water surface waves	Abella AP ; Soriano MN
9	About the possibility of cumulation stability investigation of the investigation on the hydraulic model of cylindrical implosion	Bespalov DS ; Gryazeva EM ; Kudryavtsev AY ; Meshkov EE ; Novikova IA ; Repin AS
10	Turbulent gaseous mixing induced by the Richtmyer-Meshkov instability at the shock and reshock phase: shock tube experiments and 3D numerical simulations	Bouzgarou G; Bury Y; Jamme S; Griffond J; Souffland D; Haas JF
11	Development of methods for investigating the stability of the pop-up bubble dome in case of small Atwood number	Kanygin RI; Kashcheev AD; Kudryavtsev AY; Meshkov EE; Novikova IA
12	Visualization of some unstable fluid flows by means of solid and liquid markers	Meshkov EE, Novikova IA
13	Effect of double diffusion phenomenon on solutal advective flow	Mosheva EA; Mizev AI; Kostarev KG
14	Enhanced turbulence and mixing in a controlled Taylor-Couette flow	Oualli H; Abdelalil A; Mekadem M; Bouabdallah A; Gad-el-Hak M
15	Turbulence and mixing generated by 3D sparse multi-scale grid	Usama SM ; Kopec JM ; Tellez J ; Kwiatkowski K

- 16 Passive scalar mixing in temporally developing grid turbulence ; Redondo JM ; Malik NA
Watanabe T; Nagata K
- 17 Turbulent boundary layer and mixing of waters of confluencing rivers Klimenko LS; Goldobin DS; Pimenova AV; Lyubimova TP; Lepikhin AP
- 18 Dynamic stabilization of plasma instabilities Kawata S ; Gu YJ
- 19 Effect of a relative phase of waves constituting the initial perturbation and the wave interference on the dynamics of strong shock driven Richtmyer-Meshkov flows Pandian A ; Abarzhi S
- 20 Effect of noise on Rayleigh-Taylor mixing with time-dependent acceleration Pandian A ; Swisher N ; Abarzhi S
- 21 Multifluid mathematical model for the numerical investigation of high-speed interaction of metal plates Utkin PS ; Fortova SV ; Shepelev VV
- 22 One dimensional turbulent diffusion model for hydrodynamic instability mixing zone growth Asida SM; Gazit D; Livne E
- 23 Effect of pressure fluctuations on Richtmyer-Meshkov coherent structures Bhowmick AK ; Abarzhi SI
- 24 Effect of pressure fluctuations on Richtmyer-Meshkov coherent structures Bhowmick AK ; Abarzhi SI
- 25 A computational study for the membrane supporting grid effect on the Richtmyer-Meshkov instability Mohamad AM; Samtaney R
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