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# **Turbulent Mixing and Beyond**

**Sixth International Conference**

**Tenth Anniversary Program**

## **PROGRAM**

**14 - 18 August, 2017**

**the Abdus Salam International Centre for Theoretical Physics**

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**<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 24 Aug Wed at 9.00 – 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   |
| 9.00-9.35   | TMB-2017 Introduction<br>Abarzhi SI   |
| 9.35-10.10  | Intermittent many-body dynamics at equilibrium<br>Campbell DK   |
| M2.1        | High energy density physics   |
| 10.30-11.05 | Vorticity and kinetic energy in Richtmyer-Meshkov like flows<br>Wouchuk JG  |
| 11.05-11.40 | High energy density turbulent mixing from astrophysical collisionless plasma flows to solid-density plastic flow in metals<br>Park HS       |
| 11.40-12.15 | Novel regimes of hydrodynamic instabilities and mixing in high energy density settings<br>Remington BA                                      |
| 12.15-12.50 | Scale coupling in strong shock driven Richtmyer-Meshkov flows<br>Abarzhi SI   |
| M3.1        | Non-equilibrium processes, Turbulence, Magneto-hydrodynamics  |
| 14.00-14.35 | Dynamics of the vortex line density in anisotropic superfluid turbulence<br>Procaccia I   |
| 14.35-15.10 | Instability and fragmentation of liquid jets: molecular dynamics and smoothed particle hydrodynamics simulations<br>Zhakhovsky VV           |
| 15.10-15.45 | Is helicity everywhere or nowhere? The case of rotating stratified magnetohydrodynamic turbulence<br>Cambon C                               |
| 15.45-16.20 | Non-stationary turbulent energy cascade in the framework of scaling symmetry approach<br>Gorokhovski MA                                     |
| M4.1        | Non-equilibrium processes, Plasmas  |
| 16.30-17.00 | Slow, fast and ultra-fast components of ordered structures in fluid flows<br>Chashechkin YD   |
| 17.00-17.30 | Similarity of anisotropic, variable viscosity flows<br>Danaila L  |
| 17.30-18.00 | Nonlinear interactions of kink-unstable flux ropes and shear Alfvén waves: creating smaller-scale structures from larger ones<br>Vincena ST |
| 18.00-18.30 | Turbulence spreading and avalanche dynamics in fusion plasmas<br>Hahn TS  |

14 August 2017, Monday

EULER LECTURE HALL

- M3.2 Mathematical aspects, Combustion, Interfacial dynamics  
TMB4U
- 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  
 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  
 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  
 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  
 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

- T2.2 Magneto-hydrodynamics, Physics of atmosphere, Geophysics  
 10.3-10.55 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 TMB4U  
 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 magnetohydrodynamic 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  
 9.00-9.25 Turbulent flow in the bulk of thermal convection: comparison of smooth and different roughness boundaries  
 Forooani 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  
 10.30-11.05 Symbolic approaches to characterise complex dynamics  
 Small M
- 11.05-11.40 Anomalous superdiffusive 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  
 14.00-15.00 Ten years of the TMB program  
 Sreenivasan KR
- W3.1.2 Turbulence and mixing, Interfacial dynamics  
 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  
 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
- 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
- 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  
Zmievskaia GI
- W3.2.2 Numerical modeling
- 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  
 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  
 10.30-11.05 Ohms law and the collision of magnetic flux ropes  
 Gekelman W  
 11.05-11.40 Laser generated Richtmyer-Meshkov and Rayleigh-Taylor instabilities and nonlinear wave-vortex paradigm in turbulent mixing  
 Lugomer S  
 11.40-12.10 The dynamics of 2D turbulence in magnetically confined tokamak plasmas and statistical properties of the resulting transport  
 McKee G  
 12.10-12.40 Turbulent thermal mixing in multiple interacting magnetised electron temperature filaments  
 Sydora RD
- R3.1 Mathematical aspects, high energy density physics  
 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  
 16.30-17.05 Hydrodynamic instability as consequence of laser action  
 Inogamov NA  
 17.05-17.40 Internal Capsule Defects Quenching Thermonuclear Ignition  
 Azechi H

OPPENHEIMER ROOM

- R4.1.2 Round Tables  
 17.40-19.00 Round Table

17 August 2017, Thursday

EULER LECTURE HALL

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



18 August 2017, Friday

BUDINICH LECTURE HALL

- |             |   |
|-------------|---|
| F1.1        | Combustion  |
| 9.00-9.35   | The description of the acceleration of the spherically expanding hydrogen/air flames<br>Golub VV  |
| 9.35-10.00  | Atomistic and mesoscopic simulation of detonation initiation in porous explosives<br>Murzov SA  |
| F2.1        | Numerical modeling  |
| 10.30-11.05 | Coarse grained simulation of turbulent material mixing<br>Grinstein F   |
| 11.05-11.40 | Rayleigh-Taylor turbulent mixing layers for miscible Newtonian fluids from Boussinesq approximation to fully compressible Navier–Stokes model<br>Gauthier S |
| 11.40-12.15 | Hierarchical wavelet-based modeling of turbulent flows<br>Vasilyev OV   |
| 12.15-12.50 | Turbulence and scaling in high performance computing<br>Yeung PK  |
| F3.1        | Experiments, Stochastic processes, interfacial dynamics   |
| 14.00-14.30 | Richtmyer-Meshkov shock induced fractal mixing<br>Redondo JM  |
| 14.30-15.00 | Dynamics of singularities, wavebreaking and turbulence in 2D hydrodynamics with free surface<br>Lushnikov PM  |
| 15.00-15.30 | Gyroscopic analogy of Coriolis effect for stabilizing a rotating stratified flow confined in a spheroid<br>Fukumoto Y                                       |
| 15.30-16.00 | Hydrodynamic instabilities<br>Abarzhi SI  |
| 16.00-16.20 | Analysis of high Atwood number Rayleigh-Taylor mixing using low-Mach number, variable density/viscosity, non-dissipative LES algorithm<br>Yilmaz I          |
| F4.1        | Conclusion and Summary  |
| 16.30-17.00 | Summary<br>Abarzhi SI   |
| 17.00-18.00 | Organizing Committee meeting  |

18 August 2017, Friday

EULER LECTURE HALL

- F1.2            Material science, Non-equilibrium dynamics  
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
- 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 <del>diffusion-induced</del> 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
- 26 Late-time evolution of Rayleigh-Taylor instability in a domain of a finite size Naveh A; Mathew M; Abarzhi SI
- 27 Low-symmetric coherent structures and dimensional crossover in Rayleigh Taylor flows driven by time dependent accelerations Bhowmick AK ; Abarzhi SI
- 28 Scaling laws due to fractal and non-fractal multi-scale space-filling geometries in physical systems Malik NA
- 29 Turbulent diffusion of inertial particle pairs such as in pollen and sandstorms Usama SM; Malik NA
- 30 Stably and unstably magnetized stratified weak wave turbulence Nasraoui S; Salhi A
- 31 Experimental study of heat transfer enhancement in liquid metal by rotating magnetic field Shukrun T; Sukoriansky S; Zemach E
- 32 Instability of the interface between two high-speed colliding metal plates: 3D numerical simulation Fortova SV; Shepelev VV
- 33 The effect of passivation and strain on quantum transport of Molybdenum disulfide armchair nanoribbons Tabatabaei F; Abdolhosseini I
- 34 Highly symmetric interfacial coherent structures in Rayleigh Taylor instability with time-dependent acceleration Bhowmick AK ; Abarzhi SI
- 35 Dimensional crossover in Richtmyer-Meshkov unstable flows in the presence of pressure fluctuations Bhowmick AK ; Abarzhi SI
- 36 Dimensional crossover in Richtmyer-Meshkov flows Bhowmick AK ; Nishihara K ; Abarzhi SI

37	Local and non-local energy spectra of superfluid He3 turbulence	Biferale L; Khomenko D; L'vov V; Pomyalov A; Procaccia I; Sahoo G
38	Admixture distribution around a wedge in a continuously stratified fluid	Chashechkin YD; Dimitrieva NF
39	Application of program package TurbulenceProblemSolver (TPS) to the modeling of the development of hydrodynamic instabilities	Fortova SV; Shepelev VV; Kozlov SA; Troshkin OV
40	Energy fluxes and spectra for turbulent and laminar flows	Kumar A; Verma MK; Barman S
41	Sweeping errors in turbulent particle pair diffusion in kinematic simulations	Malik NA
42	Wavelet methods in computational fluid dynamics	Vasilyev OV
43	Time domain structures in a colliding magnetic flux rope experiment	Tang SW; Gekelman W; DeHaas T; Vincena S; Pribyl P
44	Anomalous transport on scale-free networks	Fedotov S; Stage H
45	Efficient uncertainty quantification in computational fluid dynamics using polynomial chaos approach	Kumar D
46	Ability of using a backpropagation neural network for problems of two streams with different properties	Oreshin SA
47	Investigation of stabilities and instabilities at tokamak plasma behavior and machine learning with big data	Rastovic D
48	Specific interface area in a thin layer system of two immiscible liquids with vapour generation at the contact interface	Pimenova AV; Goldobin DS; Gazdaliev IM
49	Influence of zero-modes on the inertial range anisotropy of Rayleigh-Taylor turbulence	Soulard O; Grea BJ
N	Title	Author(s)
51	Numerical modeling of convection	Shelyag S
52	Relaxation from rotation and what it reveals about turbulence physics and modeling.	Perot B; Zusi C
53	Energy and mass turbulent fluxes in a salt marsh in southeastern South America (Argentina)	Tonti NE
54	Results from the Göttingen Variable Density Turbulence Tunnel	Bodenschatz E; Bewley G; Sinhuber M; Kuechler C
55	Experimental and numerical investigation of the Rayleigh-Taylor instability of the Newtonian and dilatant fluids system	Doludenko AN
56	Inteaction of a turbulent boundary layer with isotropic turbulence behind an active grid	Shet CS; Cholemari MR; Veeravalli SV
57	Neutral-plasma interactions in ionosphere: Rayleigh-Taylor turbulence, mixing and non-equilibrium wave dynamics	Mahalov A
58	Radiation of charge bunches revolving around a metamaterial sphere	Torabi M; Shokri B
59	Tutorial: models and numerics for Rayleigh-Taylor	Gauthier S

- flows between miscible Newtonian fluids
- 60 About the application of fractional calculus to the non-equilibrium process dynamics Aliverdiev AA ; Meilanov RP ; Meilanov RR ; Beybalaev VD ; Magomedov RA ; Nazaraliev MA ; Akhmedov EN
- 61 Scale-similarity of particle clustering in inertial range of turbulence Ariki T; Yoshida K; Matsuda K; Yoshimatsu K
- 62 On vortex catastrophe and nonlinear stability for plane circulations of an ideal fluid Troshkin OV; Denisenko VV; Oparina EI
- 63 Anisotropic particle diffusion in field-guided magnetohydrodynamic turbulence Tsang YK
- 64 Shock-bubble interaction near a compliant tissue-like material Adami S; Pan S; Hu XY; Adams NA;
- 65 Tapering and superheat in cylindrical continuous casting. Florio BJ; Vynnycky M
- 66 Quantized vortex lines in superfluid turbulence: how to take them into account? Procaccia I
- 67 A Lagrangian fluctuation-dissipation relation for scalar turbulence Drivas TD; Eyink GL
- 68 Turbulent and financial time series analysis Mohammed A
- 69 Geometrical shock dynamics in turbulent mixing Drikakis D; Kokkinakis IW
- 70 Transition to turbulence in reciprocating channel flow. Ebadi A; White CM; Pond I; Dubief Y

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<http://JournalofCosmology.com/JOC26/TMB17.pdf>.

## NOTES

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