



# **Turbulent Mixing and Beyond**

**International Conference**

## **PROGRAM**

**August 18-26, 2007**

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

**Strada Costiera 11, 34014 Trieste, Italy**

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## When?

<b>Routine</b>	
8.30 – 10.00	lectures and talks
10.00 – 10.30	coffee break
10.30 – 12.00	lectures and talks
12.00 – 14.00	lunch
14.00 – 16.00	lectures and talks
16.00 – 16.30	coffee break
16.30 – 18.30	lectures and talks
<b>Poster session:</b>	Fr, 24 Aug, 10.30 – 12.00
<b>Round Tables:</b>	Thu, 23 Aug, 16.30 – 18.30

## Where?

<b>Lectures, Talks, Tutorials:</b>	Main Lecture Hall in Main Bldg
<b>Posters:</b>	Poster Hallway near Main Lecture Hall
<b>Round-Tables:</b>	Meeting Room, Main Bldg
<b>Others:</b>	Seminar room and two offices in Main Bldg
<b>Computer/Internet:</b>	Computer rooms, wireless

**On Friday, 24 August, two afternoon sessions 14.00-16.00 and 16.30-18.30 will be held in Adriatico, Giambiagi Lecture Hall.**

## Coffee and Receptions

<b>Bar</b> (coffee, tea):	Main Bldg opens 08.00 – 17.00, Mon-Fr
<b>Coffee Breaks:</b>	near Main Lecture Hall, 10.00 and 16.00 every day
<b>Receptions:</b>	Sat, 18 Aug, 19.00 – 21.00, Sat 25 August, 19.00 – 21.00, Adriatico
<b>Dinner:</b>	Tue, 21 Aug, 19.00 – 21.00, Adriatico

## 18 August 2007, Saturday

08.30 – 10.20	Registration		
10.20 – 10.50	Welcome to the TMBW (Abarzhi) and the ICTP (Sreenivasan)		
10.50 – 11.30	K. Nishihara, Generation of non-uniform vorticity at the interface and its linear and nonlinear growth		
11.30 – 12.00	B.J. Balakumar, Simultaneous PIV-PLIF measurements in a Richtmyer-Meshkov unstable gas curtain		
		12.00 – 14.00	lunch
14.00 – 14.40	S. Gauthier, Compressibility effects in Rayleigh-Taylor type instabilities		
14.40 – 15.20	C.R. Doering, Multi-scale measures of mixing for steady scalar sources		
15.20 – 16.00	M.J. Andrews, Effect of initial conditions on late-time development of Rayleigh-Taylor mixing		
		16.00 – 16.30	break
16.30 – 17.00	A.A. Nepomnyashchy, Nonlinear waves in superdiffusive reaction-diffusion systems		
17.00 – 17.30	A.G. Lamorgese, A conditionally cubic-gaussian stochastic lagrangian model for acceleration in isotropic turbulence		
17.30 – 18.00	R. Stresing, Stochastic analysis of the turbulent cascade process		
18.00 – 18.20	Yu.V. Dumin, Interplay of the turbulence and strong coulomb's coupling in the formation of the anomalous plasma resistance		
		19.00 – 21.00	reception

## 19 August 2007, Sunday

08.30 – 08.50	A.L. Mazzucato, Vanishing viscosity limit for 2D flows in an unsteadily rotating circle		
08.50 – 9.30	V.L. Saveliev, Group-theoretical model of developed turbulence and renormalization of the Navier-Stokes equation		
09.30 – 10.10	E.A. Kuznetsov, Spectra of turbulence generated by singularities	10.10 – 10.30	break
10.30 – 11.00	H. Azechi, From physics understanding of the ablative Rayleigh-Taylor instability to impact fast ignition		
11.00 – 12.00	Ye. Aglitskiy, Classical and ablative Richtmyer-Meshkov and Rayleigh-Taylor instabilities and other ICF-relevant plasma flows diagnosed with monochromatic X-ray imaging (tutorial)	12.10 – 14.00	lunch
14.00 – 14.40	S.I. Abarzhi, Turbulent mixing and beyond		
14.40 – 15.20	S. Tanveer, Divergent series, Borel summation and 3-D Navier-Stokes equation		
15.20 – 16.00	K.R. Sreenivasan, Resolution effects in direct numerical simulations of turbulence	16.00 – 16.30	break
16.30 – 17.00	R. Bonazza, Experimental and numerical investigation of shock-induced distortion of a spherical gas inhomogeneity		
17.00 – 17.30	Xiaolin Li, Study of instability driven mixing using improved tracking and transport control		
17.30 – 18.00	N. Zabusky, Vortex processes in accelerated inhomogeneous flows		
18.00 – 18.30	A. Weatherhead, Numerical simulation using high-resolution methods		

## 20 August 2007, Monday

08.30 – 09.00	A. Pankin, Computer modeling of the accretion disk corona		
09.00 – 09.30	C.A. Meakin, Turbulent entrainment in stellar interiors		
09.30 – 10.10	S. Cowley, The origin of magnetic fields in the universe and the turbulent dynamo		
		10.10 – 10.30	break
10.30 – 11.10	M. Matalon, Effect of background turbulence on the propagation of large-scale flames		
11.10 – 11.40	A.J. Aspden, Turbulent flames in type Ia supernovae		
11.40 – 12.10	N. Valdimirova, Numerical study of reactive Rayleigh-Taylor turbulence		
		12.05 – 14.00	lunch
14.00 – 14.30	R. Onishi, Retrieval of collision kernels from the change of droplet size distributions with a simple inversion scheme		
14.30 – 15.00	Xiangyu Hu, Vorticity production and mixing in shock bubble interaction		
15.00 – 15.30	S. Chumakov, Scaling properties of sub-grid-scale energy dissipation and sub-grid-scale scalar dissipation		
15.30 – 16.00	B. Fryxell, Simulation of turbulent flows with strong shocks		
		16.00 – 16.30	break
16.30 – 17.00	R. Fisher, Large-scale simulation of weakly-compressible turbulence		
17.00 – 18.30	A. Dubey, L. Reid, R. Fisher, FLASH code tutorial		

## 21 August 2007, Tuesday

08.30 – 08.55	C. Matsuoka, Nonlinear behavior of a vortex sheet in incompressible Richtmyer-Meshkov instability with cylindrical geometry		
08.55 – 09.20	W.I. Goldburg, The third-order Eulerian structure function in free surface turbulence		
09.20 – 10.00	D. Campbell, The Fermi Pasta Ulam (FPU) problem: solitons, ILMS, q-breathers and mixing		
		10.00 – 10.30	break
10.30 – 11.00	B. Rolling, Spatio-temporal investigation of the scalar gradients in correlation to the local topology of a turbulent flow		
11.00 – 11.40	P.K. Yeung, Developments in large numerical simulations of turbulence: resolution, intermittency, and Schmidt number scaling		
11.40 – 12.20	V.E. Zakharov, Wind-driven sea and atmospheric boundary layer		
		12.20 – 14.00	lunch
14.00 – 14.40	J. Niemela, Features of thermal turbulent convection at very high Rayleigh numbers		
14.40 – 15.20	G. Falkovich, Mixing and segregation in two-phase flows		
15.20 – 16.00	D.P. Lathrop, The effects of rotation and magnetic fields on turbulence		
		16.00 – 16.30	break
16.30 – 17.00	A. Sameen, The DNS of thermal convection at moderate Rayleigh numbers under strongly non-Boussinesq conditions		
17.00 – 17.30	L. Wang, Dissipation element analysis of turbulence		
17.30 – 18.00	R.E. Breidenthal, The effect of acceleration on turbulent entrainment		
18.00 – 18.40	R. Ecke, Turbulence in gravity-driven stratified layers: understanding oceanic overflows using laboratory experiments		
		19.00 – 21.00	dinner

## 22 August 2007, Wednesday

08.30 – 09.00	R. Bingham, Shock wave revival and turbulent mixing in supernovae explosions		
09.00 – 09.30	V.V. Dwarkadas, SN evolution in massive star winds, and associated hydrodynamic instabilities		
09.30 – 10.10	R.P. Drake, Approaches to turbulence in high-energy-density experiments		
		10.10 – 10.40	break
10.40 – 11.20	B. Alder, Atomistic simulation of the Rayleigh-Taylor instability		
11.20 – 12.00	S. Lebedev, Experimental study of supersonic plasma jets		
		12.00 – 14.00	lunch
14.00 – 15.00	G. Barbastathis, Holographic three-dimensional imaging (tutorial)		
15.00 – 16.00	S.S. Orlov, New technologies for fluid dynamics experiment and diagnostics (tutorial)		
		16.00 – 16.30	break
16.30 – 17.10	G. Hazak, Distribution functions in the statistical theory of mixing due to Rayleigh-Taylor instability		
17.10 – 17.40	T. Elperin, Experimental study of mixing at the external boundary of a submerged turbulent jet		
17.40 – 18.10	B. Cheng, Multiphase flow model for the unstable mixing of layered incompressible materials		
18.10 – 18.40	E. Leinov, Investigation of the Richtmyer-Meshkov instability under re-shock conditions		

## 23 August 2007, Thursday

08.30 – 09.00	D.M. Israel, Adapting moment closure for large-eddy simulation of variable density turbulence		
09.00 – 09.30	O.V. Troshkin, On the theory of periodic layer in incompressible fluid		
09.30 – 10.00	O.M. Belosterkovskiy, On structural analysis of turbulence	10.00 – 10.30	break
10.30 – 11.00	S. Fauve, Chaotic dynamos generated by turbulent flows		
11.00 – 11.30	E. Knobloch, Saturation of the magneto-rotational instability: asymptotically exact theory		
11.30 – 12.10	A. Obabko, Magneto-rotational instability, turbulence and dynamo	12.10 – 14.00	lunch
14.00 – 14.40	I. Wygnanski, On periodically excited turbulent mixing layer created downstream of a lane chevron partition		
14.40 – 15.20	V. Lvov, Large fundamentals of wall bounded turbulence		
15.20 – 16.00	H. Nagib, High Reynolds number wall-bounded turbulence, the approach to an asymptotic state and international consortium at CICLoPE		
		16.00 – 16.30	break
16.00 – 17.10	Round Table (theory)		
17.10 – 17.50	Round Table (numerics)		
17.50 – 18.30	Round Table (experiment)		



## 24 August 2007, Friday

- 08.30 – 09.00 E. Son, Rayleigh-Taylor instability and mixing in micro- and nanohydrodynamics
- 09.00 – 10.00 M.C. Lee, Ionospheric plasma turbulence triggered over Puerto Rico via Rayleigh-Taylor instability by tsunami-launched acoustic gravity waves on December 24, 2004
- 10.00 – 10.30 J.M. Redondo, Mixing in non-homogenous Rayleigh-Taylor driven turbulent flows
- 10.30 – 12.00 POSTER session: the list of posters will be available later.
- 10.30 coffee served  
12.00 – 14.00 lunch
- 14.00 – 14.40 T. O’Kane, A comparison of statistical dynamical and ensemble prediction methods during the formation of large-scale coherent structures in the atmosphere (Adriatico)
- 14.40 – 15.20 J. Werne, Atmospheric turbulence forecasting: promising new approaches based on bayesian hierarchical modeling and the high-resolution simulations and observations needed to make them work (Adriatico)
- 15.20 – 16.00 S. Sabatino, Turbulent mixing in the environment and impacts beyond its scale (Adriatico)
- 16.00 – 16.30 break
- 16.30 – 17.00 B. Galperin, Zonostrophic turbulence
- 17.00 – 17.30 A.V. Straube, Mixing-induced global modes in open reactive flows
- 17.30 – 18.00 S. Sukorianskiy, Anisotropic turbulence and internal waves in stably stratified flows (QNSE theory)
- 18.00 – 18.40 Ya. Fukumoto, Elliptical instability of a vortex tube and drift current induced by it

## 25 August 2007, Saturday

08.30 – 09.00	N. Yurchenko, Speculation about near-wall turbulence scales		
09.00 – 09.30	A. Baryshnikov, Baroclinic turbulence of dissociating gas as a reason for instability of bow shock wave		
09.30 – 10.00	P. Perlekar, The modification of decaying, homogeneous, isotropic turbulent flows by polymer additives		
		10.00 – 10.30	break
10.30 – 11.10	D.I. Pullin, Large-eddy simulations of shock-generated mixing in Richtmyer-Meshkov instability		
11.10 – 11.40	S.I. Anisimov, Molecular dynamics simulation of the Rayleigh-Taylor instability		
11.40 – 12.10	S.I. Abarzhi, Multi-scale character of the nonlinear dynamics of the Rayleigh-Taylor and Richtmyer-Meshkov unstable fluid interface mixing		
		12.10 – 14.00	lunch
14.00 – 14.40	N.A. Tahir, Studies of high energy density states in matter using intense heavy ion beams: the HED-ge-HOB collaboration		
14.40 – 15.20	P. Clavin, Instabilities and nonlinear patterns of thermal fronts: gaseous flames, detonations, ablation fronts in ICF...		
15.20 – 16.00	F. Porcelli, Magnetic reconnection and chaotic behavior in plasmas		
		16.00 – 16.30	break
16.30 – 17.00	A.J. Aspden, Characterization of implicit LES methods		
17.00 – 17.30	T.A. Ota, Shock tube experiment: half height dense gas region		
17.30 – 18.10	A. Siegel, Turbulent mixing phenomena in liquid metal cooled reactors (to be confirmed)		
18.10 – 18.40	Summary		
		19.00 – 21.00	reception

## 26 August 2007, Sunday

Post-deadline submissions  
Organizing Committee Meeting  
Social event