

# Euromech Colloquium 512 Programme

Accademia delle Scienze, via Accademia delle Scienze 6, Torino

The time for each presentation is 20 minutes plus 5 minutes for discussion.

## Sunday, October 25

17:00 – 19:00 Pre-Registration, atrium of the Palazzo dell'Accademia delle Scienze (this palace also hosts the Egyptian Museum and the National Art Gallery, Galleria Sabauda)

## Monday, October 26

8.15 – 8.45 Registration

8:45 – 9:00 Welcome and Opening

### Session A – Homogeneous Turbulence I (Chairperson: Charles Meneveau)

9:00 – 9:25 **W.Bos**, L.Chevillard, J.F.Scott, *Reynolds number effect on the velocity increment skewness in isotropic turbulence.*

9:25 – 9:50 **M.H.Jensen**, B.S.Madsen, S.Chakraborty, *Pair dispersion in a shell model field.*

9:50 – 10:15 **D.A.Donzis**, K.R.Sreenivasan, *The bottleneck effects and the Kolmogorov constant in three-dimensional turbulence.*

10:15 – 10:40 **U.Frisch**, S.Chakraborty, S.S.Ray, *Extended self-similarity works for Burgers and why.*

10:40 – 11:00 Coffee Break

### Session B – Turbulence Interactions with Particles I (Chairperson: J. Christos Vassilicos)

11:00 – 11:25 J.Bec, L.Biferale, M.Cencini, A.S.Lanotte, **F.Toschi**, *Caustics and intermittency in Turbulent suspensions of heavy particles.*

11:25 – 11:50 R.H.A.IJzermans, M.W.Reeks, E.Meneguz, M.Picciotto, **A.Soldati**, *Segregation of inertial particles in turbulence via the full Lagrangian approach.*

11:50 – 12:15 **A.Lanotte**, *Pair dispersion of inertial particles in turbulent flows.*

12:15-12:45 Round Table (Chairperson: Robert A.Antonia)

12:45-14:30 Lunch

### Session C – Scalar Transport (Chairperson: Pui-kuenYeung)

14:30 – 14:55 **T.Gotoh**, T.Watanabe, *On the scalar transfer flux in homogeneous turbulence.*

14:55 – 15:20 **I.Mazzitelli**, *On the intermittency of scalars in atmospheric boundary layer.*

15:20 – 15:45 Coffee Break

### Session D – Stratified, rotationary and two phase flows (Chairperson: Toshiyuki Gotoh)

15:45 – 16:10 **S.Kurien**, *Constraints on energy distribution in the rotating Boussinesq system.*

16:10 – 16:35 **S.P.Malinowski**, P.Korczyk, T.A.Kowalewski, *Turbulent mixing of cloud with the environment: small scales of two-phase evaporating flow seen by particle imaging velocimetry.*

16:35 – 17:00 **P.Odier**, J.Chen, R.Ecke, M.Rivera, *Mixing lengths scaling in a gravity flow.*

17:00 – 17:25 **F.S.Godeferd**, *Relating statistics to dynamics in axisymmetric homogeneous turbulence such as rotating, stratified and MHD flows.*

17:25 – 17:50 P.Orlandi, **S.Pirozzoli**, *Vorticity dynamics in turbulence growth.*

17:50 – 19:30 Welcome Buffet

## **Tuesday, October 27**

8.15 – 8.30 Registration

8:30 – 9:00 A.R. Meo, *Historical Portrait of G.L. Lagrange.*

### **Session E – Theoretical aspects in various contexts (Chairperson: Daniela Tordella)**

9:00 – 9:25 **D.Proment**, S.Nazarenko, M.Onorato, *Direct energy cascade in the nonlinear Schrödinger equation.*

9:25 – 9:50 **R.Friedrich**, M.Voskuhle, O.Kamps, *Kinetic equations for turbulent vorticity statistics.*

9:50 – 10:15 **J.C.Vassilicos**, *The turbulence problem(s): small-scale non-universality.*

10:15 – 10:40 **C.Connaughton**, R.Rajesh, O.Zaboronski, *Is there an energy cascade in strong wave turbulence?*

10:40 – 11:00 Coffee Break

### **Session F – Small scale statistics in flows with boundaries I (Chairperson: Michele Onorato)**

11:00 – 11:25 **M.S.Paoletti**, D.S.Zimmermann, S.A.Triana, D.P.Lathrop, *Turbulent dynamics in rapidly rotating Couette flows.*

11:25 – 11:50 S.Salon, **V.Armenio**, *The Stokes Eckman layer.*

11:50 – 12:15 P.E.Hamlington, S.Krasnov, T.Boeck, **J.Schumacher**, *Small-scale statistics in wall bounded shear flows.*

12:15-12:45 **Round Table (Chairperson: Marie Farge)**

12:45-14:30 Lunch

### **Session G - Symmetry, Anisotropy (Chairperson: Zellman Warhaft)**

14:30 – 14:55 **L.Danaila**, *Axisymmetric description of the scale-by-scale scalar transport.*

14:55 – 15:20 **A.Celani**, *Symmetry, geometry and anomalous scaling in turbulence.*

15:20 – 15:45 **F.Rincon**, *Scale-by-scale energy budgets in turbulent convection.*

15:45 – 16:10 **D.Tordella**, M.Iovieno, *Small scale anisotropy induced by a spatial variation of the integral scale.*

16.10 – 16.35 **Z.S.She**, *Order functions for statistical description of inhomogeneous turbulent flows*

16:35 – 17:00 Coffee Break

### **Session H – Two dimensional Turbulence (Chairperson: Federico Toschi)**

17:00 – 17:25 **M.Farge**, R.N.Van Yen, K.Schneider, *Coherent enstrophy production and turbulent dissipation in two-dimensional turbulence, with and without walls, in the vanishing viscosity limit.*

17:25 – 17:50 **P.Perlekar**, R.Pandit, *Topological properties of turbulence in thin films: numerical simulations.*

17:50 – 18:15 **G.Boffetta**, *Statistics of two-dimensional Navier-Stokes turbulence.*

20.00 Teatro Regio di Torino, *La Traviata*

## **Wednesday, October 28**

8.15 – 8.30 Registration

8:30 – 9:00 In Memory of Robert Kraichnan (Uriel Frisch)

### **Session I – Lagrangian methods (Chairperson: Uriel Frisch)**

9:00 – 9:25 B.Lüthi, M.Holzner, **A.Liberzon**, A.Tsinober, S.Ott, J.Berg, J.Mann, *Structural aspects of acceleration in turbulent flows.*

9:25 – 9:50 **C.Meneveau**, H.Yu, *Public database analysis of Lagrangian statistics in isotropic turbulence.*

9:50 – 10:15 **R.Volk**, E.Calzavarini, E.Leveque, J.F.Pinton, *Finite-sized particle dynamics in turbulent flows.*

10:15 – 10:40 **K.Zybin**, V.Sirota, A.Ilyn, A.Gurevich, *Lagrangian statistical theory of fully-developed hydrodynamic turbulence.*

10.40 – 11.00 Coffee Break

### **Session J – Small scale statistics in flows with boundaries II (Chairperson: Jörg Schumacher)**

11:00 – 11:25 **F.Aldudak**, M.Oberlack, *Dissipation element analysis of scalar fields in wall-bounded turbulent flows.*

11:25 – 11:50 **R.A.Antonia**, H.Abe, *Analogy between small-scale velocity and passive scalar fields in a turbulent channel flow.*

11:50 – 12:15 **S.Pirozzoli**, *On the small-scale coherent structures of wall-bounded turbulence.*

12:15-12:45 **Round Table (Chairperson: Zellman Warhaft)**

12.45-14.30 Lunch

### **Session K – Homogeneous Turbulence II (Chairperson: Eberhardt Bodenschatz)**

14:30 – 14:55 **P.K.Yeung**, D.A.Donzis, K.R.Sreenivasan, *Pressure fluctuations and small-scale intermittency in DNS at high Reynolds number.*

14:55 – 15:20 **L.Chevillard**, R.Robert, V.Vargas, *A Stochastic Representation of the local structure of turbulence.*

15:20 – 15:45 **M.Iovieno**, D.Tordella, *Decay exponent of large and small scales in isotropic turbulence.*

15:45 – 16:10 **E.Deangelis**, C.M.Casciola, R.Piva, *Small scales dynamics in dilute polymers solutions.*

16:10 – 16:35 **M.Germano**, *The simplest interaction.*

16:35 – 17:00 Coffee Break

17:00 – 18:30 Visit to the Egyptian Museum of Torino (english speaking guide)

19:30 Conference Dinner, restaurant of the “Circolo dei Lettori”, Palazzo Graneri della Roccia, via Bogino 9.

## Thursday, October 29

8:30 – 9:00 In Memory of Akiva Yaglom (Arkady Tsinober and Robert Antonia)

### Session L – Turbulence interaction with particles II (Chairperson: Antonio Celani)

9:00 – 9:25 **A.Scagliarini**, L.Biferale, F.Toschi, *Dynamics of vortex filaments in turbulent flows and their impact on particle dispersion.*

9:25 – 9:50 **C.M.Casciola**, P.Gualtieri, F.Picano, G.Sardina, *Clustering of inertial particles in shear flows.*

9:50 – 10:15 H.Siebert, S.Geraschenko, K.Lehmann, L.R.Collins, R.A.Shaw, **Z.Warhaft**, *Small scale statistics of turbulence and inertial particles in clouds and in the laboratory.*

10:15 – 10:40 **L.Ducasse**, A.Pumir, *Collision rate of heavy particles in synthetic turbulent flows.*

10.40 – 11.00 Coffee Break

### Session M – Velocity gradient statistics in turbulence (Chairperson: Daniela Tordella)

11:00 – 11:25 H.Xu, A.Pumir, **E.Bodenschatz**, *Scale dependence of coarse-grained velocity gradients in turbulence.*

11:25 – 11:50 **E.Calzavarini**, *Velocity gradients statistics along particle trajectories in turbulent flows.*

11:50 – 12:15 **B.Lüthi**, M.Holzner, A.Tsinober, *Expanding the Q-R space to three dimensions.*

12:15 - 12:45 Round Table (Chairperson: Uriel Frisch)

12:45 - 13:00 Closing Session

13:00 Lunch