<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>15:30</td>
<td>Opening ceremony</td>
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<tr>
<td>16:00</td>
<td><strong>AULA MAGNA</strong>&lt;br&gt;16:00 - Invited speaker • Instabilities and high-resolution simulations of particle-laden flows. Eckart Meiburg&lt;br&gt;16:45 - Invited speaker • Enhanced mixing and entrainment in turbulent plumes and gravity currents. Claudia Cenedese</td>
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<tr>
<td>18:00</td>
<td>Welcome cocktail reception (Campus Cittadella, Corte Interrata)</td>
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<td>8:30</td>
<td>AULA MAGNA</td>
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<tr>
<td>9:15</td>
<td>Invited speaker • Toward internal gravity wave turbulence: an experimental approach. Sylvain Jouault</td>
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**MULTIPHASE FLOWS**
Session 1 - Chair: Luca Brandt

10:45
- 403 - Numerical and experimental investigation of regional deposition of glass fibers in the human respiratory system. Yoo Gyu

11:00
- 103 - Drag reduction in turbulent channel flow of flexible fibers. Aash Alford Brown

11:15
- 436 - Orientation dynamics of rigid fibers in a turbulent channel flow. Sathish Shankar

11:30
- 335 - The Lennard-Jones triangle: a tool to analyze particle rotation anisotropies. Helge E. Andersen

11:45
- 402 - Single-drop breakup in homogeneous isotropic turbulence. Mac Aulo

12:00
- 449 - Modeling of coalescence and breakup of fluid particles in turbulent flows. Antonio Buffa

12:15
- 625 - Cloud-clear air interfaces. Population Balance Equation solutions by considering nucleation information from in-situ measurements, and by modeling the droplet growth on super-saturation fluctuation data from numerical simulation. Mina Golshan

12:30
- 34 - Dynamics of small flexible fibers in a turbulent channel flow. Cristian Menchic

**INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS**
Session 1 - Chair: Ugo Passionelli

10:45
- 33 - Optimal initial perturbations and the minimal seed of Kolmogorov boundary-layer flow. Christer Nicodemus

11:00
- 110 - Particle image velocimetry measurement on the turbulent boundary layer over convergent-divergent ramps. Fang Xu

11:15
- 222 - Diagonal plot scaling accounting for adenosine pressure gradient history effect. Asta Dziezie

11:30
- 407 - Turbulence dynamics in separated flows: the generalized Kolmogorov equation for inhomogeneous anisotropic conditions. Jian-Paul McKeone

11:45
- 597 - Experiments in non-equilibrium turbulent boundary layers with favourable pressure gradients. Yuanmin Zuo

12:00
- 261 - Direct Numerical Simulations towards ultimate turbulence. Richard J. A. M. Stevens

12:15
- 8 - On a new symmetry-induced modeling framework applied to the closure problem of turbulence. Dario Klingenber

12:30
- 356 - Rotating turbulent Rayleigh-Bénard convection at very large Rayleigh numbers. Murali Murthy

12:45
- 92 - Development and investigation of thermal subgrid-scale models for Large-Eddy Lattice Boltzmann methods. Moussavian Goethel

**WALL BOUNDED TURBULENCE**
Session 1 - Chair: Defor D. Lubbe

10:45
- 117 - Plane statistics in a rough Rayleigh-Bénard convection cell. Julien Schart

11:00
- 218 - Experimental study of the bottleneck in fully developed turbulence. Everhard Auderset

11:15
- 81 - Geometric turbulent regime of rotating Rayleigh-Bénard connection at different Prandtl numbers. Andrea J. Aguado-García

11:30
- 527 - Temporal Large-Eddy Simulation with exact decoupling. Daniel Ficher

11:45
- 37 - Global flow structures in rotating Rayleigh-Bénard convection in pressured Sf6. Yan Zhang

12:00
- 36 - Controlled eddy simulation of complex wall bounded flow at large Reynolds numbers. Yan Zhao

12:15
- 170 - Condensates in thin-layer turbulence. Adrian van Kooi

12:30
- 68 - Rotation rate and preferential alignment of rods in convective turbulence from experiments and simulations. Enrico Calzavarini

**TURBULENT CONVECTION**
Session 1 - Chair: Bérengère Dubrulle

10:45
- 75 - Effects of large-scale turbulence on the preferential concentration of elongated gyrotactic swimmers. Filippe De Lillo

11:00
- 29 - Effect of rotation on turbulent thermal convection on a hemisphere. Patrick Federer

11:15
- 135 - Condensates in quasi-two-dimensional turbulence. Stefano Musacchio

11:30
- 39 - Surface and culturing of gyrotactic micro-swimmers in free-surface turbulence. Hendrik Blote

**INTERMEDIACY AND SCALING**
Session 1 - Chair: Semion Sukoriansky

10:45
- 4 - Inertial range skewness of the longitudinal velocity distribution in fully isotropic turbulence. Eberhard Bodenschatz

11:00
- 126 - Efroimov transition to the closure problem of turbulence. Danu Klingenber

11:15
- 591 - Universality of power spectra in quantum turbulence using the Gross-Pitaevskii equation. Yan Jinh

11:30
- 628 - Lifted rotating Rayleigh-Bénard convection. Jyotika Nave

12:00
- 489 - Spectral simulations of quantum turbulence using the Gross-Pitaevskii equation. Jean-Paul Mollicone

12:15
- 481 - Spectral simulations of two-dimensional turbulence. Enrico Calzavarini

**ROTTATING FLOWS**
Session 1 - Chair: Rudie P. J. Kunnen

10:45
- 81 - Geostrophic turbulent regime of rotating Rayleigh-Bénard connection different Prandtl numbers. Andrea J. Aguado-García

11:00
- 565 - On a proper tensor-diffusivity model for Large-Eddy Simulations of Rayleigh-Bénard connection.parra Teo

11:15
- 607 - Effects of spatial filtering and turbulent transport. Daniel Feldmann

11:30
- 256 - Direct Numerical Simulations of Rayleigh-Bénard convection. Daniel Feldmann

12:00
- 126 - Elusive transition to the closure problem of turbulence. Danu Klingenber

12:15
- 131 - Rotating homogeneous Rayleigh-Bénard convection. Francesco Tass

**NUMERICAL METHODS AND DATA ANALYSIS**
Session 1 - Chair: Antonio Buffo

10:45
- 488 - Unifying view on heat transport and quasi-static magnetoconvection. Bérengère Dubrulle

11:00
- 75 - Effects of large-scale turbulence on the preferential concentration of elongated gyrotactic swimmers. Filippe De Lillo

11:15
- 27 - Eulerian vs Lagrangian exchange by coherent structures on scale-to-scale energy flux. Dario Klingenber

11:30
- 561 - Sub-surface PIV measurements of double diffusive convection at large Reynolds numbers. Renée Bhat

12:00
- 49 - Subcritical turbulent conduction in rotating Rayleigh-Bénard connection. Benjamin Fomol

12:15
- 628 - Lifted rotating Rayleigh-Bénard convection. Jyotika Nave

**TWO-DIMENSIONAL TURBULENCE**
Session 1 - Chair: Gregory Falkovich

10:45
- 356 - Rotating turbulent Rayleigh-Bénard convection at very large Rayleigh numbers. Murali Murthy

11:00
- 46 - Orientation of non-spherical particles in two-dimensional turbulence. Enrico Calzavarini

11:15
- 200 - Turbulence-driven rotors in 2D turbulent flows. Nicolas Frances

11:30
- 230 - Kinematics of large buoyant ellipsoids rising in a quiescent fluid. Jelle Wij

12:00
- 563 - Sub-surface PIV measurements of velocity fields in Faraday flows. Raffaello Colombo

12:15
- 570 - Phase transitions to condensate formation in two-dimensional turbulence. Daniel Vavaliaris

**COMPLEX AND ACTIVE FLOWS**
Session 1 - Chair: Massimo Cencini

10:45
- 92 - Development and investigation of thermal subgrid-scale models for Large-Eddy Lattice Boltzmann methods. Moussavian Goethel

11:00
- 200 - Turbulence-driven rotors in 2D turbulent flows. Nicolas Frances

11:15
- 563 - Sub-surface PIV measurements of velocity fields in Faraday flows. Raffaello Colombo

11:30
- 570 - Phase transitions to condensate formation in two-dimensional turbulence. Daniel Vavaliaris

12:00
- 46 - Orientation of non-spherical swimming particles in turbulence. Marcel Wedi

12:15
- 570 - Phase transitions to condensate formation in two-dimensional turbulence. Daniel Vavaliaris

12:30
- 46 - Orientation of non-spherical swimming particles in turbulence. Marcel Wedi
**ETC17 • Scientific Programme**

**Wednesday • September 4th, 2019**

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<tr>
<td><strong>MULTIPHASE FLOWS</strong></td>
<td><strong>INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS</strong></td>
<td><strong>WALL BOUNDED TURBULENCE</strong></td>
<td><strong>TURBULENT CONVECTION</strong></td>
<td><strong>BOUNDARY FREE TURBULENCE</strong></td>
<td><strong>STRATIFIED FLOWS</strong></td>
<td><strong>TURBULENCE, WAVES AND INSTABILITIES IN PLASMAS</strong></td>
<td><strong>TRANSPORT AND MIXING</strong></td>
<td><strong>NON-NEWTONIAN FLOWS</strong></td>
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<td>Session 2 - Chair: Alfredo Soldati</td>
<td>Session 2 - Chair: Daniela Formenti</td>
<td>Session 2 - Chair: Paulo Lucini</td>
<td>Session 2 - Chair: Anne Sengert</td>
<td>Session 1 - Chair: Alain Pumir</td>
<td>Session 1 - Chair: Alex Liberson</td>
<td>Chair: William H. Matthaeus</td>
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<td>18:00</td>
<td>36 - The stochastic subgrid model for droplet vaporization in a highly turbulent flow. Michael Gorokhovski</td>
<td>What can we learn from the Edge about bypass transition? Dan S. Hennings</td>
<td>Mechanisms of helicity excitation in large-scale convection in closed volumes. Radovan Stuparow</td>
<td>Asymptotic dynamics of high dynamic range stratified turbulence. Cahn-Cailfald</td>
<td>Inferring physical parameters in turbulence: from nudging to machine learning. Luca Bilveda</td>
<td>Path-planning smart swimmers in turbulent flows. Rahul Pandit</td>
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# ETC17 • Scientific Programme

**Thursday • September 5th, 2019**

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Author</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Invited speaker</td>
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<tr>
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<td>Structures and scalings in natural thermal convection. Olga Shishkina</td>
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<tr>
<td>09:15</td>
<td>Invited speaker</td>
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<td>Experimental investigation of turbulence and complex flows. Jerry Westerweel</td>
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<td>10:00</td>
<td>AULA MAGNA</td>
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<td>10:45</td>
<td>MULTIPHASE FLOWS</td>
<td>Session 4 - Chair: Caroline Nore</td>
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<td>10:45</td>
<td>NON-NEWTONIAN FLOWS</td>
<td>Session 2 - Chair: Carlo Massimo Ciaciolesi</td>
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<tr>
<td>11:00</td>
<td>WALL BOUNDED TURBULENCE</td>
<td>Session 6 - Chair: Jean-Philippe Laval</td>
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<tr>
<td>11:00</td>
<td>COMPRESSIBLE FLOWS</td>
<td>Session 1 - Chair: Supratik Banerjee</td>
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<td>11:15</td>
<td>BOUNDARY FREE TURBULENCE</td>
<td>Session 3 - Chair: Juan Senez</td>
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<td>11:30</td>
<td>WAVE TURBULENCE</td>
<td>Chair: Nicolas Montier</td>
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<td>Chair: Nicolas Montier</td>
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<tr>
<td>11:45</td>
<td>VORTEX DYNAMICS</td>
<td>AND STRUCTURE FORMATION</td>
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<td>AND STRUCTURE FORMATION</td>
<td>Session 1 - Chair: Maxime Rossi</td>
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<td>12:00</td>
<td>TWO-DIMENSIONAL TURBULENCE</td>
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<td>TWO-DIMENSIONAL TURBULENCE</td>
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<td><strong>LUNCH / INDUSTRY SYMPOSIUM</strong></td>
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**MULTIPHASE FLOWS**  
Session 5  
Chair: Alessandro Sozza  
14:00  
338 - Inertial effects on the settling and collisions between spheres in a turbulent flow.  
Anvrate Nas  
447 - Instability of flow subregions in three-dimensional wake transition.  
Alyosha Alekseenk  
448 - Scaling of the streamwise velocity fluctuation in a turbulent pipe flow.  
Joslin Tom  
503 - Observation of a self-similar structure in a point-source plume released in a turbulent boundary layer.  
Kapil A. Chauhan  
14:15  
580 - Setting of large particles in a turbulence column.  
Yale Montrose  
413 - Slip and transpiration velocity to modeled textured surfaces in turbulent channel flow.  
Simon Pasche  
301 - Transient dynamics of the turbulent wake of a three-dimensional bluff body.  
Yafei Hua  
603 - Effect of turbulence-induced inertial clustering on droplet optical statistics in a polydisperse droplet field.  
M. Shyam Kumar  
14:20  
185 - Multiscale preferential sweeping of particles settling in turbulence.  
Jain Tang  
484 - Predicting particle phase velocity statistics in a sheared turbulent suspension using fluctuating force-fluctuating torque (FFFT) model.  
Sweegul Chees  
593 - Transition of the flow reversal in a turbulent thermal convection.  
Jie Chen  
361 - On the inertial range scaling of the streamwise velocity in large scale coherent structures.  
Lisa Rademacher  
246 - Analyzing and influencing the wake of an active turbulence grid.  
Lucas Mancuso  
423 - Non-Richardson turbulent particle pair diffusion.  
Nadeem A. Malik  
14:30  
194 - Convective turbulence in liquid sodium.  
Ravindra Prasad  
447 - Investigation of dynamics of secondary currents in marginally turbulent wake-filmed pipe flow.  
Julian Brandt  
57 - The evolution of the large-scale flow in magnetic convection.  
Julier Zimer  
213 - On the inertial range scaling of the streamwise velocity in large scale coherent structures.  
Moritz Sieber  
506 - Effects of thermal stratification on the asymmetric state in spherical Couette flow.  
Sambodhi Roh  
14:45  
448 - Scale analysis of a numerical von Karman flow.  
Hagen Full  
94 - Heat transfer and temperature measurements in extreme rapidly rotating connection.  
Matteo Madonna  
310 - Influence of internal heating on convection in the rotating spherical gap.  
Claus Zwingler  
427 - Spatial hierarchy detection in large scale coherent structures.  
Ali Rehman  
473 - Non-Richardson turbulent particle pair diffusion.  
Vladimir N. Alexeev  
14:50  
237 - Hybrid LES / RANS paradigm for 3D turbulent mixing.  
Filipe Pereira Soares  
211 - Transition in rotating plane Couette flow, revisited.  
Simone Pasche  
421 - On the fine structure of turbulence determined in spherical Couette flow.  
Tiago Ribeiro  
654 - Effects of thermal stratification on the asymmetric state in spherical Couette flow.  
Oleksandr Koval  
546 - The role of turbulence on the development and entrainment of a turbulent jet in cross-flow.  
Olin S. Veltz  
15:00  
153 - Discrete adjoint based data assimilation for non-turbulent models.  
Oliver Brenner  
578 - Transition in rotating plane Couette flow, revisited.  
Kristian Rognes  
154 - Statistical properties of the filtered turbulence.  
Manus Khan  
453 - Direct Numerical Simulations of combined Rayleigh-Taylor/shear flow to late times.  
Jens Bolte  
519 - Results from the Zugspitze experiment: on-site cloud-droplet particle-tracking experiment.  
Guus Bertens  
376 - Numerical simulations of counter-current round jets.  
Karl Wiesenz  
446 - High Reynolds number turbulence generation by active grid and wind tunnel control.  
Lars Neuhoff  
272 - Effect of asymmetry in a counter-rotating Taylor-Couette flow.  
Ksenosnikov Amayash  
15:15  
119 - Heat transfer in rotating well-dominated flows.  
Albrecht Brethouwer  
97 - Synchronizing turbulence via nudging.  
Patrice Clair D’Alonzi  
35 - Fragmentation of large aggregates in turbulence.  
Patrice Le Gal  
564 - The role of turbulence on the development and entrainment of a turbulent jet in cross-flow.  
Graham Freedland  
15:20  
347 - Connection in liquid sodium: a direct comparison of DNS and experiments.  
Lukas Zimer  
408 - Instability of steady flows in a vertical Taylor-Couette system with a radial temperature gradient.  
Lowrano Kaj  
257 - Hybrid LES / RANS paradigm for 3D turbulent mixing.  
Filipe Pereira Soares  
326 - Spatial hierarchy detection in large scale coherent structures.  
Ali Rehman  
15:30  
139 - Local estimates of Holder exponents in turbulent vector fields.  
Maxim Nazaren  
429 - Boeung-suppressed transition in pipe flow.  
Ashley P. Mills  
532 - Spatial hierarchy detection in large scale coherent structures.  
Ali Rehman  
15:45  
142 - Convective turbulence in liquid sodium.  
Jensen Schell  
213 - On the inertial range scaling of the streamwise velocity in large scale coherent structures.  
Moritz Sieber  
15:50  
614 - Localized structures and solitary waves in a vertical Taylor-Couette system with a radial temperature gradient.  
Leonora Khalo  
313 - Stabilization of vortex shedding flow past a square prism using slip surfaces.  
K. Anusith Nair  
508 - Effects of thermal stratification on the asymmetric state in spherical Couette flow.  
Sambodhi Roh  
16:00  
437 - Experimental investigation of a sheared thermally unstable boundary layer.  
Gabi Haffner  
235 - Multiscale rolling turbulent pipe flow diffusion.  
Nadeem A. Malik  
16:15  
502 - Characterization of the hydraulic instability from experimental data using stochastic reduced order modeling.  
Mauriz Seiber  
142 - Convective turbulence in liquid sodium.  
Sharif Shafrazi  
257 - Hybrid LES / RANS paradigm for 3D turbulent mixing.  
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397 - Investigation of dynamics of secondary currents in marginally turbulent wake-filmed pipe flow.  
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235 - Multiscale rolling turbulent pipe flow diffusion.  
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83 - Effect of mass loading on the collision rate of cloud droplets.  
Bogdan Bove  
301 - Transient dynamics of the turbulent wake of a three-dimensional bluff body.  
Yafei Hua  
603 - Effect of turbulence-induced inertial clustering on droplet optical statistics in a polydisperse droplet field.  
M. Shyam Kumar  
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19:00  
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Mauriz Seiber  
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Filipe Pereira Soares
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<td>ROOM 1</td>
<td>MULTIPHASE FLOWS</td>
<td>Francesco Picano</td>
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<td>16:15</td>
<td>ROOM 3</td>
<td>INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS</td>
<td>Annamaria Tzeschkova</td>
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<td>16:15</td>
<td>ROOM 5</td>
<td>QUANTUM AND SUPERFLUID TURBULENCE</td>
<td>Daniele Peruzzo</td>
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<tr>
<td>16:15</td>
<td>ROOM 7</td>
<td>TURBULENT CONVECTION</td>
<td>Ronald van Daalen</td>
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<td>16:15</td>
<td>ROOM 9</td>
<td>INTERMITTENCY AND SCALING</td>
<td>Jerome Bec</td>
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<tr>
<td>16:15</td>
<td>ROOM 10</td>
<td>ROTATING FLOWS</td>
<td>Stefano Ercole</td>
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<tr>
<td>16:15</td>
<td>ROOM 4</td>
<td>NUMERICAL METHODS AND DATA ANALYSIS</td>
<td>Posing 4 seating</td>
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<tr>
<td>16:15</td>
<td>ROOM 8</td>
<td>GEOPHYSICAL AND ASTROPHYSICAL TURBULENCE</td>
<td>N. V. Pogorelov</td>
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<tr>
<td>16:15</td>
<td>ROOM 6</td>
<td>TURBULENCE IN THE HELIOSPHERE AND IN THE LOCAL INTERSTELLAR MEDIUM</td>
<td>Hussein Aluie</td>
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**Thursday • September 5th, 2019**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Topic</th>
<th>Chair/Presenter</th>
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<tr>
<td>19:00</td>
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**ETC17 • Scientific Programme**

**ROOM 1**

- **16:15** - 537 - Sediment transport in a turbulent open-channel with macro-turbulence elements. Michele Triassi

**ROOM 3**


**ROOM 5**

- **16:15** - 337 - Inertial particles in a swirling flow. Francesco Picano

**ROOM 7**

- **16:15** - 292 - Collapse of turbulence in a turbulent open-channel flow at critical volume loading. Frank Tassell

**ROOM 9**

- **16:15** - 498 - Turbulent drag reduction as asymmetry of 3d bluff bodies in supersonic boundary layer. Simon J. Illingworth

**ROOM 10**

- **16:15** - 31 - Aero-optical investigation of shock-driven turbulent mixing. Henrik Scholz

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**ETC17 • Scientific Programme**

**ROOM 1**


**ROOM 3**

- **16:15** - 337 - Inertial particles in a swirling flow. Francesco Picano

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### Session 5: Turbulent Convection

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<tr>
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<tbody>
<tr>
<td>ROOM 2</td>
<td>Turbulent Convection</td>
<td>Markus Scherer, Konstantin Fröhlich</td>
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<td>Marko J. Schmidt, Markus Scherer</td>
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<td>Dario Vincenzi, Francesco Zonta</td>
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### Session 6: Convective Instability

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<tr>
<td>ROOM 1</td>
<td>Convective Instability</td>
<td>Jan Schumacher, Dario Vincenzi</td>
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<td>Yuji Tasaka, Berengère Podvin</td>
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<td>Yoshiki Hiruta, Daisuke Noto</td>
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### Session 7: Multiphase Flows

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<td>Mehdi Niazi Ardekani, Jacek Pozorski</td>
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### Session 8: Fluid-Structure Interaction

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### Session 9: Transport and Mixing

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<tr>
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### Session 10: Numerical Methods and Data Analysis

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### Session 14: Numerical Methods and Data Analysis

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17th ETC European Turbulence Conference

Tuesday • September 3rd, 2019

AULA MAGNA

15:30 Opening ceremony

16:00 Invited speaker • Instabilities and high-resolution simulations of particle-laden flows. Eckart Meiburg

16:45 Invited speaker • Enhanced mixing and entrainment in turbulent plumes and gravity currents. Claudia Cenedese

18:00 Welcome cocktail reception (Campus Cittadella, Corte Interrata)

Wednesday • September 4th, 2019

AULA MAGNA

8:30 Invited speaker • The subcritical route to turbulence. Dwight Barkley

9:15 Invited speaker • Toward internal gravity wave turbulence: an experimental approach. Sylvain Joubaud

10:00 Coffee break

ROOM: 1

MULTIPHASE FLOWS • Session 1 • Chair: Luca Brandt • 10:45 - 12:45

10:45 Numerical and experimental investigation of regional deposition of glass fibres in the human respiratory airway. Yan Liu, Aljosz Bełka, Frantisek Lízal, Jure Ravnik, Matjaž Hribaršek, Paul Steinmann

11:00 Drag reduction in turbulent channel flow of flexible fibres. Aash Alizad Banaei, Marco Edoardo Rosti, Luca Brandt

11:15 Orientation dynamics of rigid fibres in a turbulent channel flow. Subhani Shaik, Sofia Koparman, Vladislav Rinsky, Rene van Hout

11:30 The Lumley triangle: a tool to analyse particle rotation anisotropies. Helge I. Andersson, Kun Yang, Lihao Zhao

11:45 Single-drop breakup in homogeneous isotropic turbulence. Marc Avila, Alberto Vela-Martín

12:00 Modeling of coalescence and breakup of fluid particles in turbulent flows. Antonio Buffo, Marco Vanni, Daniele Marchisio

12:15 Cloud-clear air interfaces: Population Balance Equation solutions by considering nucleation information from in-situ measurements, and by modeling the droplet growth on super-saturation fluctuation data from numerical simulation. Mina Golshan, Federico Fraternale, Marco Vanni, Daniela Tordella

12:30 Dynamics of small flexible fibers in turbulent channel flow. Cristian Marchioli, Diego Dotto

12:45 Lunch

MULTIPHASE FLOWS • Session 2 • Room 1 • Chair: Alfredo Soldati • 14:00 - 15:45

14:00 Droplet nucleation in turbulent steam jets. Andrea Gallegati, Francesco Battista, Paolo Guagliardi, Carlo Massimo Cassiola

14:15 Bubble break-up in turbulence. Luc Devê, Daniel J. Ruth, Stéphane Perrard, Wouter Mastert

14:30 Experimental investigation of bubble breakup in strong turbulence. Rui N, Ashk Ullah Mohammad Muzuk, Ashwanth Selvanandi, Shiyong Tan, Yinghe Qi

14:45 Effect of soluble surfactant on turbulent bubbly channel flow undergoing topology changes. Metin Mucadoglu, Zaheer Ahmed, Dualet Izbassarov, Osn Tammisoli, Jiacai Li, Greter Trögyvason

15:00 Dynamics and fragmentation of small flexible fibers in turbulence. Sofia Allende, Christophe Henry, Jérémie Bec

15:15 Fragmentation of fibres in turbulent flows. Christophe Brouzet, Benjamin Favier, Marie-Julie Delbe, Nicolas Vandenberghe, Gautier Vehilh

15:30 Droplet size distribution in surfactant-laden turbulent channel flow. Alfredo Soldati, Giovanni Soliga, Alessio Roccon

15:45 Coffee break

MULTIPHASE FLOWS • Session 3 • Room 1 • Chair: Mikhael Gorokhovski • 16:15 - 18:15

16:15 Evaporating droplets in homogeneous shear turbulence. Philipp Weiss, Daniel W. Meyer, Patrick Jenny

16:30 3D-reconstruction of O2 bubble wake concentration fields of two consecutive bubbles. Alexandre van Kameke, R. Colomé, S. Rottinger, S. Kastens, M. Schluter

16:45 Multiscale Lattice Boltzmann simulations of droplet dynamics in turbulent flows. Felix Milan, Luca Biferale, Mauro Sbragaglia, Federico Toschi

17:00 On the conservation of energy for interface-capturing techniques for multiphase flows. Application to falling films. Nicolas Valle, Francesc Xavier Trías, Jesús Castro

17:15 Analysis and modeling of evaporating dilute polydispersed sprays in isotropic turbulence. Valentin Giddens, Daniel Werner Meyer, Philipp Weiss, Patrick Jenny

17:30 On the momentum and heat exchange in wind-wave turbulent flows. Federico Romoli, Lorenzo Silvestri, Andrea Cimarelli

17:45 Two-phase homogeneous shear turbulence. Marco E. Rosti, Zhouyang Gu, Suhas S. Jain, Michael S. Dodd, Luca Brandt

18:00 The stochastic subgrid model for droplet vaporization in a highly turbulent flow. Mikhael Gorokhovski, Surya Koundinya Oruganti
**INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS • Session 1 • Chair: Yohann Duguet • 10:45 - 12:30**

10:45  Optimal initial perturbations and the minimal seed of blasius boundary-layer flow.  
Christos Pavlouakis, Miguel Beneitez, Dan S. Henningson

11:00  Transition in boundary layers with freestream turbulence. Kristina Durovic, Philipp Schlatter, Aneshir Hanifi, Dan S. Henningson

11:15  Boundary layer transition induced by freestream turbulence subject to strong pressure gradient and high-curvature effects.  
Yoonmin Zhao, Richard D. Sandberg, Ivan Marusic

11:30  Invariant solutions of the filtered Navier-Stokes equations representative of Large-scale motions in the asymptotic suction boundary layer flow. Saajid Azimi, Carlo Cassu, Tobias M. Schneider

11:45  Transition to turbulence in görtler flows. Jeremie Daguaut, Guillaume Balarac, Maria-Eletra Negretti, Christophe Brun

12:00  Noise emission of sub- and super-sonic boundary layer flows. Yi Zhang, Martin Oberlack

12:15  Spatial evolution of transition inside porous media. Xu Chu, Yongxiang Wu, Ulrich Rist, Bernhard Weigand

12:30  On the verge of laminarization in boundary layer flows. Yohann Duguet, Taras Khapko, Philipp Schlatter, Dan S. Henningson

12:45  **Lunch**

**INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS • Session 2 • Room 3 • Chair: Daniela Tordella • 14:00 - 15:45**

14:00  Bursting and amplitude explosions at the onset of turbulent stripes in channel flow.  
Bjorn Hof, Chaitanya S. Paranjape, Vasudevan Mikkund, Nazmi Budanur, Boofang Song, Yohann Duguet

14:15  Unsteady localized wave packets in laminar shock-wave/boundary-layer interactions.  
Sébastien Niessen, Koen J. Groot, Stefan Hickel, Vincent E. Terrapon

14:30  Experiments on large-scale flows around turbulent spots.  
José Eduardo Wesfreid, Lukasz Klotz, Tao Li, Alexandre Pavlenko, Benoit Semin

14:45  There and back again, build up and collapse of transitional plane Couette flow captured by rare events approaches. Joran Rolland

15:00  Turbulence threshold for plane Poiseuille flow. Sébastien Gamé, Laetitia T. Tuckerman, Akshunna Dogra

15:15  Wave focusing and multiple dispersion transitions of perturbation waves in the plane Poiseuille flow.  
Gabriele Nestro, Federico Fraternale, Daniela Tordella

15:30  Nonlinear dynamics of bursting spots in subcritical inclined convection. Florian Reetz, Tobias M. Schneider

15:45  **Coffee break**

**WALL BOUNDED TURBULENCE • Session 1 • Chair: Ugo Piomelli • 10:45 - 12:45**

10:45  Particle image velocimetry measurement on the turbulent boundary layer over convergent-divergent riblets.  
Fang Xu, Shao Zhang, Shuming Zhang

11:00  Diagnostic plots accounting for adverse pressure gradient history effect.  
Artur Dróżdż, Paweł Niegałtoew, Wrold Elsner, Ricardo Vinuesa, Ramis Örlü, Philipp Schlatter

11:15  Turbulence dynamics in separated flows: the generalised Kolmogorov equation for inhomogeneous anisotropic conditions.  
Jean-Paul Moflione, Francesco Battista, Paolo Guerrieri, Carla Massimo Casciola

11:30  Experiments in non-equilibrium turbulent boundary layers with favorable pressure gradients. Ralph Volino

11:45  The effect of momentum exchange by coherent structures on the friction factor and mean velocity profile at extreme Reynolds numbers.  
Hamidreza Anbarlooei, Fabio Ramos, Daniel O. A. Cruz, Cecilia Mageski

12:00  Experimental investigation of spatially developing turbulent boundary layers over longitudinal grooves.  
Michael Klaas, Wenfeng Li, Wolfgang Schröder

12:15  The quest for high Reynolds number turbulence: results from and future perspectives of ciclope.  
Gabriele Belloni, Henrik Alfredsson, Jens Fransson, Hassan Nagib, Ramis Örlü, Alessandra Talamelli

12:30  Numerical investigation of flow control by embedded vortices in a diffuser. Ugo Piomelli, Yang Zhang, Gang Chen, Jiakuan Xu

12:45  **Lunch**
17th ETC European Turbulence Conference  
Wednesday • September 4th, 2019

WALL BOUNDED TURBULENCE • Session 2 • Room 5 • Chair: Paolo Luchini • 14:00 - 15:45

14:00  Dynamics and evolution of turbulent Taylor rolls. Francesco Sacca, Rodolfo Ostilla-Mónico, Roberto Verzicco
14:15  Turbulence: the view from the wall. Miguel P. Encinar, Javier Jimenez
14:30  A realizable turbulence model for the Reynolds stress based on the square root tensor. Kazuhira Inagaki, Takato Anki, Fujihira Hamba
14:45  Statistics of streamline geometry in wall-bounded turbulence. Rina Perven, Joseph Klewicki, Jimmy Philip
15:00  Hierarchy of vortices in a developed turbulent boundary layer. Susumu Goto, Yutaro Motoori
15:15  How invariant solutions support the formation of oblique turbulent-laminar stripes. Tobias M. Schneider, Florian Reetz
15:30  A one dimensional example of the contrasting behaviour of laminar and turbulent flow. Paolo Luchini
15:45  Coffee break

WALL BOUNDED TURBULENCE • Session 3 • Room 5 • Chair: Lipo Wang • 16:15 - 18:15

16:15  Bifurcations of turbulent patterns in channel flow. Masaki Shimizu, Paul Manneville
16:30  Secondary flow generation mechanisms in turbulent sinusoidal channels. Hassan Nabig, Alvaro Vidal, Philipp Schlatter, Ricardo Lopez
16:45  Structure of the skin-friction drag fluctuations in turbulent channel flows. Cheng Cheng, Wei Peng Li, Adrian Lozano Duran, Hong Liu
17:00  Mechanism of quasi-linear Orr burst in turbulent channel flows. Yongsook Kwon, Javier Jimenez
17:15  Data-driven quantification of nonlinear interactions in the resolvent analysis of turbulent channel flow. Ryan M. McMullen, Kevin Rosenberg, Beverley J. McKeon
17:30  Analysis of the skin-friction line structure in channel turbulence. Lipo Wang, Wei Peng Li

ROOM: 7

TURBULENT CONVECTION • Session 1 • Chair: Detlef Lohse • 10:45 - 12:30

10:45  Plume statistics in a rough Rayleigh-Bénard convection cell. Julien Salot, Laura Guislain, Francesca Chillía
11:00  Elusive transition to the ultimate regime of turbulent Rayleigh-Bénard convection. Pavel Urban, Pavel Hanzelka, Tomáš Králík, Michal Macok, Vítra Muslová, Ladislav Skřebek
11:15  The ultimate state of convection without the hot air. Philippe E. Roche

17th ETC European Turbulence Conference  
Wednesday • September 4th, 2019

11:30  Direct Numerical Simulations towards ultimate turbulence. Richard J. A. M. Stevens, Roberto Verzicco, Detlef Lohse
11:45  Velocity structure functions of thermal convection and hydrodynamic turbulence follow similar scaling. Shashwat Bhattacharya, Shubhodeep Sadhukhan, Anirban Guha, Mahendra K. Verma
12:00  Unifying view on heat transport enhancement behaviour in confined Rayleigh-Bénard, rotating Rayleigh-Bénard, double diffusive convection and quasi-static magnetohydroconvection. Kai Leong Chung, Yantao Yang, Zhi Li Lin, Shi-Di Huang, Jin-Qiang Zhang, Richard J. A. M. Stevens, Roberto Verzicco, Detlef Lohse, Ke-Qing Xia
12:15  Transition to the ultimate regime in 2D Rayleigh-Bénard convection. Detlef Lohse, Xiaoqie Zhu, Varghese Mathias, Richard J. A. M. Stevens, Roberto Verzicco
12:30  Lunch

TURBULENT CONVECTION • Session 2 • Room 7 • Chair: Anne Sergent • 14:00 - 15:30

14:00  How surface roughness reduces heat transport in turbulent Rayleigh-Bénard convection. Quan Zhou, Yi-Zhao Zhang, Chao Sun
14:15  About the influence of rough boundaries on the heat transport in highly turbulent thermal convection. Stephan Weiss, Chien-Chia Liu, Xiaozhe Hu, Eberhard Bodenschatz
14:30  Investigating Reynolds analogy over riblet roughened surfaces. Aminezza Rouhi, Davide Modesti, Sebastian Endrikat, Nicholas Hutchins, Daniel Chung
14:45  Boundary layer structure for different plate boundary conditions. Najmeh Faroozani, Dmitry Kasnov, Jörg Schumacher
15:00  Pore-scale-resolving Direct Numerical Simulations of turbulent natural convection in porous media. Stefan Gasow, Andrey V. Kuznetsov, Marc Avila, Yan Jin
15:15  Heat transport at the roughness scale in turbulent Rayleigh-Bénard convection. Anne Sergent, Moharem Bekkadi, Bérengère Podvin, Yann Fagegneau
15:45  Coffee break
Wednesday • September 4th, 2019

TURBULENT CONVECTION • Session 3 • Room 7 • Chair: Rodion Stepanov • 16:15 - 18:15

16:15 The influence of spatial boundary heat distribution on turbulent convection. Johanna Mader, John Craske, Maarten van Reeuwijk

16:30 Transition to the ultimate regime in a radiatively driven convection experiment. Basile Gollet, Vincent Bouillaut, Simon Lapot, Sébastien Aumaître

16:45 Dynamic heterogeneity and conditional statistics of non-gaussian temperature fluctuations in turbulent thermal convection. Xiaozhou He, Yin Wang, Penger Tong

17:00 Dense Lagrangian particle tracking of turbulent Rayleigh-Bénard convection in a cylindrical sample using shake-the-box. Johannes Bosbach, Daniel Schanz, Philipp Godbersen, Andreas Schröder

17:15 The influence of thermal boundary conditions on turbulent forced convection pipe flow. Steffen Schaub, Paouya Forosghi, Luca Marasco, Ricardo Vinuesa, Philipp Schlatter, Thomas Wietzel, Bettina Frohnagpfel

17:30 Numerical study of radiatively driven convection: influence of the Prandtl number on the heat flux in the mixing-length regime. Miguel Benjamin, Vincent Bouillaut, Sébastien Aumaître, Basile Gollet

17:45 Design process of a vertical backward facing step experiment for forced- and mixed-convection low Prandtl number flows. Christine Steiner, Thomas Schaub, Kevin Krauth, Joachim Konrad

18:00 Mechanisms of helicity excitation in large-scale convection in closed volumes. Rodion Stepanov, Andrei Vasilev, Peter Frick, Andrei Sukhanovskii, Valerij Titov, Frank Stefani

BOUNDARY FREE TURBULENCE • Session 2 • Room 9 • Chair: Alain Pumir • 16:15 - 18:00

16:15 4D particle tracking velocimetry measurements in a von Karman turbulence experiment. Yospar Ostovan, Christophe Cuvier, Paul Debue, Valentina Volari, Adam Cheminent, Yospar Ostovan, Christophe Cuvier, Jean-Philippe Laval, Jean-Marc Foucaut, Cécile Wiertel, Vincent Padilla, François Daviaud


16:45 Entrainment and self-similarity in negatively buoyant turbulent jets. Gerrit Elsinga, Carlos B. da Silva

17:00 How large can velocity gradients be in turbulent flows? Alain Pumir, Dhawal Buaria, Eberhard Bodenschatz, P. K. Yeung

17:15 Scale-by-scale analysis of a turbulent temporal jet. Elisabetta De Angelis, Andrea Cimarelli, Jean-Paul Mollicone, Maarten van Reeuwijk, Thorsten Stoeßer
17th ETC European Turbulence Conference  

**Wednesday • September 4th, 2019**

**ROOM: 2**

**ROTATING FLOWS • Session 1 • Chair: Rudie P. J. Kunnen • 10:45 - 12:30**

10:45 Subcritical turbulent condensate in rotating Rayleigh-Bénard convection. Benjamin Favier, Céline Guervilly, Edgar Knobloch


11:15 Global flow structures in rotating Rayleigh-Bénard convection in pressurised SF6. Xuan Zhang, Olga Shishkina

11:30 Rotating homogeneous Rayleigh-Bénard convection. Francesco Toselli, Stefano Musacchio, Guido Boffetta

11:45 Rotating turbulent Rayleigh-Bénard convection at very large Rayleigh numbers. Marcel Wodi, Dennis van Gril, Guenter Bodenschatz, Stephan Weiss

12:00 Tilted rotating Rayleigh-Bénard convection. Lyuba Novi, Jost von Hardenberg, Antonello Provenzale


12:30 Lunch

**STRATIFIED FLOWS • Session 1 • Room 2 • Chair: Alex Liberzon • 14:00 - 15:45**

14:00 DNS study on large-scale and small-scale flow structures of stably-stratified shear layers. Tomoaki Watanabe, James J. Riley, Koji Nagata, Keigo Matsuda, Ryo Onishi

14:15 Entrainment zone properties in the atmospheric boundary layer conditioned on turbulent and non-turbulent regions. Katherine Fodor, Juan Pedro Mellado

14:30 Signature and energetics of internal gravity waves in stratified turbulence. Andrea Mattioli, Alexandra Delache, Fabian Godefurd

14:45 Can implicit LES of gravity currents match the mixing efficiency of a DNS? Ricardo Andrè Schuh Frantz, Bruno Avila Farenzena, Jorge Ugo Silvestrini

15:00 Turbulent entrainment in sheared convective boundary layers. Armin Haghshehasan, Juan Pedro Mellado


15:30 Particles crossing density interfaces. Alex Liberzon, Lilly Verso, Maarten van Reeuwijk

15:45 Coffee break

**STRATIFIED FLOWS • Session 2 • Room 2 • Chair: Calm-cille Caubefield • 16:15 - 18:00**


16:30 Decaying turbulence in a stratified fluid generated by a high-Prandtl-number scalar. Hideshi Hanazaki, Shinya Okino

16:45 Kelvin-Helmholtz instability above Richardson number 1/4. Jeremy Parker, Calm-cille Caubefield, Rich Krausell

17:00 Regime transitions and energetics of sustained stratified shear flows. Adrian Lefauve, Jamie Partridge, Paul Linden

17:15 Sensitization of eddy-viscosity models to buoyancy effects for predicting natural convection flows. Syed Muhb Saad Jameel, Remi Manceau, Vincent Herbert

17:30 Subcritical and supercritical transitions for stratified fluid in a nearly semicircular pool. Akhishesh Kumar, Alban Pathérat

17:45 Experimental investigation of lock exchange flow using MTV/MTT. Tanmay Agrawal, Spencer Zimmerman, Jimmy Philip, Joseph Klewicki

18:00 Asymptotic dynamics of high dynamic range stratified turbulence. Calm-cille Caubefield, Gavin D. Portwood, Steve de Bruyn Kops

**ROOM: 8**

**NUMERICAL METHODS AND DATA ANALYSIS • Session 1 • Room 8 • Chair: Antonella Abbè • 10:45 - 12:45**

10:45 Temporal Large-Eddy Simulation with exact deconvolution. Daniel Oberle, David Pruett, Patrick Jenny

11:00 On a proper tensor-diffusivity model for Large-Eddy Simulations of Rayleigh-Bénard convection. F. Xavier Trías, Firas Dabbagh, Daniel Santos, Andrey Gorobets, Assensi Oliva

11:15 Controlled eddy simulation of complex wall bounded flows at large Reynolds numbers. Yan Jin

11:30 Effects of spatial filtering on scale-to-scale energy flux. Daniel Fahlmann, Jan Chen, Marc Avila

11:45 Development and investigation of thermal subgrid-scale models for Large-Eddy Lattice Boltzmann methods. Maximilian Geerdke, Daniel Rau, Hermann Nirschl, Mathias J. Krause

12:00 Spectral simulations of quantum turbulence using the Gross-Pitaevskii equation. Danaïla Ionut, Michikazu Kabayashi, Cananit Lohede, Francky Luddens, Ph. Parnaudeau, Luminta Danaïla

12:15 A general formalism for scales interaction and their modelling in iles. Antonella Abbè, Andrea Cinarelli, Andrea Crivellini, Massimo Germano

12:30 Lunch
17th ETC European Turbulence Conference

TURBULENCE, WAVES AND INSTABILITIES IN PLASMAS
Room 8 • Chair: William H. Matthaeus • 14:00 - 15:45

14:00 Solar wind turbulence.
Renaud Ferrand, Nahuel Andrés, Fouad Sahraoui, Sébastien Galtier, Romain Mayrand, Pablo Mininni, Pablo Dmitruk

14:15 Shear flow instabilities in asymmetric magnetic reconnection. Dario Bargagni, Anna Perona, Daniela Grasso, Emanuele Tassi

14:30 Macrosphysics and microphysics of energy transfer in kinetic plasma. Yan Yang, Minping Wan, William H. Matthaeus, Luca Sarri, Tolası N. Parasarh, Quanming Lu, Yipeng Shi, Shiyi Chen

14:15 Curvature of Lagrangian trajectories in turbulence with zonal flows. Benjamin Kadoch, Wouter J. T. Bos, Kai Schneider

15:00 Simulation study of high magnetic Prandtl number magnetohydrodynamic turbulence under hall effects. Hideaki Miura, Jingyuan Yang, Toshiyuki Gotoh

15:15 Magnetic turbulence anisotropy and cascade rates in the heliosheath and local interstellar medium as seen by the voyagers. Federico Fraternale, Nikolai V Pogorelov, John D Richardson, Daniela Tordella

15:30 Solar wind and magnetosheath observations of energy transfer, intermittency and dissipation. William H. Matthaeus, Alex Chasapis, Riddhi Bandyopadhyay, Rohit Chhiber, Tulasi Parashar, Manuel Cuesta, Yan Yang, Minping Wan, Luca Sarri, Valvo

15:45 Coffee break

NUMERICAL METHODS AND DATA ANALYSIS
Session 2 • Room 8 • Chair: Luca Biferale • 16:15 - 18:15

16:15 Turbulence modeling using artificial neural network. Yui Hattori, Satoshi Miyazaki

16:30 Predictions of turbulent shear flows by neural networks and application to off-wall boundary conditions. Luca Guastoni, Prem Anand Srinivasan, Hassein Aztounp, Philipp Schlatter, Ricardo Vinuesa

16:45 Can deep to physics-informed learning of turbulence: diagnostics. Michael Chertkov, Arvind Mohan

17:00 Can artificial neural networks trained through deep reinforcement learning become a tool to active flow control and turbulence? Jean Rabault, Mirao Kuchta, Alexander Kuhlbe, Aksel Lesn, Bernd R. Noack

17:15 Optimal sub-grid-scale models for inertial range turbulence. Michele Buzzicotti, Luca Biferale, Fabio Bonaccorso, Kartik Iyer

17:30 Wavelet-convolutional LSTM: an efficient deep learning paradigm for high fidelity turbulence. Arvind Mohan, Dan Daniel, Daniel Livescu, Michael Chertkov

17:45 Data-driven investigations of scale interactions in turbulent flows. Nikj Vivecaersten, Thomas van Larcher, Abhishek Paraswaran Hakanpura, Johannes van Lindhein, Éta Kotynk, Rupert Klein

18:00 Inferring physical parameters in turbulence: from nudging to machine learning. Luca Biferale, Michele Buzzicotti, Fabio Bonaccorso, Patrick Clark di Leoni

ROOM: 10

TWO-DIMENSIONAL TURBULENCE
Session 1 • Chair: Gregory Falkovich • 10:45 - 12:30

10:45 Effect of rotation on turbulent thermal convection on a hemisphere. Patrick Fischer, Charles-Henri Bruneau, Hamid Kelly

11:00 Condensate in quasi two-dimensional turbulence. Stefano Mosacchio, Guido Boffetta

11:15 Condensates in thin-layer turbulence. Adrian van Kan, Alexandros Alexakis, Takahiko Nemoto

11:30 Generalised flows and turbulent transport. Simon Thalabard, Ben Jeremie

11:45 Turbulence-driven rotors in 2D turbulent flows. Nicolas Francois, Hua Xia, Horst Pummann, Michael Shats

12:00 Sub-surface PIV measurements of velocity fields in Faraday flows. Raffaele Colantu, Michael Schöler, Alexandra von Kameke

12:15 Turbulence appearance and non-appearance in thin fluid layers. Gregory Falkovich, Natalia Vladimirova

12:30 Lunch

TRANSPORT AND MIXING
Session 1 • Room 10 • Chair: Joerg Schumacher • 14:00 - 15:45

14:00 Turbulent mixing in a channel flow. Dimitrios Papavassiliou, Quoc T. Nguyen

14:15 Two-point small-scale flow properties measured by means of Lagrangian rigid fiber tracking. Mattia Cavali, Stefano Olivieri, Andrea Mazzino

14:30 Non-Gaussianity in turbulent relative dispersion. Benjamin Dovensh, David Thomson

14:45 A structural subgrid-scale model for Large-Eddy Simulation of relative dispersion of particles in isotropic turbulent flows. Guadong Jin

15:00 Anisotropic passive scalar fluctuations with uniform mean gradient in statistically homogeneous isotropic turbulence. Tatsuya Yasuda, Toshiyuki Gotoh, Takeshi Watanabe, Izumi Saito

15:15 Turbulent mixing in variable-density helium-air jet. Y evac Brahami, Michael Goedler, Dani Raimb, Emelin Vaira, Luminita Danaila

15:30 Lagrangian perspective on turbulent passive scalar mixing. Joerg Schumacher, Paul Goetzfried, Mohammad S. Emran, Emmanuel Villermaux

15:45 Coffee break
TRANSPORT AND MIXING

16:15 Buoyancy regulation of non-motile phytoplankton in a turbulent flow. Matteo Borgnino, Guido Boffetta, Filippo De Lillo, Idan Tuval
16:30 Settling dynamics of inertial particle. David De Souza, Romain Monchaux, Anne Dejoan
16:45 Turbophoresis of small heavy particles in homogeneous turbulence. Robin Vallea, Jérémie Béc
17:00 Broadening of cloud droplet size distribution and liquid water content spectrum in turbulence. Izumi Saio, Tatsuya Yasuda, Toshiyuki Gotoh, Takeshi Watanabe
17:15 Transport properties of quasi-neutrally-buoyant inertial particles. Marco Martins Alonso, Silvio M. A. Gama, Andrea Mazzino, Paolo Muratore-Ginanneschi
17:30 Design, construction and characterization of instrumented particles for the Lagrangian characterization of turbulent flows. Facundo Cabrera, Pablo Cobelli
17:45 Spheroids in decaying turbulence from Taylor-Green vortex flow. Rohith Jayaram, Jurriaan J. J. Gillissen, Lihao Zhao, Helge I. Andersson
18:00 Path-planning smart swimmers in turbulent flows. Rahul Pandit, A. Jaya Kumar, Akhilesh Kumar Verma, Jeremie Béc

ROOM: 4

COMPLEX AND ACTIVE FLOWS

10:45 Effects of large-scale turbulence on the preferential concentration of elongated gyrotactic swimmers. Filippo De Lillo, Guido Boffetta, Matteo Borgnino, Massimo Cencini
11:00 Surfacing and clustering of gyrotactic micro-swimmers in free-surface turbulence. Harshit Bhatia, Cristian Marchioli, Alfredo Soldati
11:15 Controlling active spinners using vortex lattices. Horst Punzmann, Hua Xia, Jean-Baptiste Gorce, Nicolas Francois, Michael Shats
11:30 Rotation rate and preferential alignment of rods in convective turbulence from experiments and simulations. Enrico Calzavarini, Linfeng Jiang, Chao Sun
11:45 Kinematics of large buoyant ellipsoids rising in a quiescent fluid. Jelle Will, Varghese Mathai, Dominik Kug, Sander Huisman, Detlef Lohse, Chao Sun
12:00 Phase transitions to condensate formation in two-dimensional turbulence. Moritz Linkmann, Bruno Eckhardt, Manuel Holmann, Guido Boffetta, Cristina M. Marchetti
12:15 Orientation of non-spherical swimming particles in turbulence. Massimo Cencini, Guido Boffetta, Matteo Borgnino, Filippo De Lillo, Kristian Gustavsson, Bernhard Mahlig
12:30 Lunch

NON-NEWTONIAN FLOWS

14:00 DNS-DEM simulation of turbulent non-newtonian suspension flow. Enzu Zheng, Murray Rudman, Shibo Kuang, Andrew Chryss
14:15 Some mechanism processes concerning shear-thinning t-junction mixing with Direct Numerical Simulation. Haining Luo, Deloche Alexandre, Simoens Serge
14:30 Temporal statistics in two-dimensional elastic turbulence. Himani Garg, Stefano Berti, Enrico Calzavarini
14:45 Effects of numerical resolution on elasto-inertial turbulence. Vincenzo Tamponi, Yves Dubief, Fujian Yin, Jacob Page, Rich Kerswell
15:00 Effects of viscoelasticity on turbulent bubbly flow. Ouji Tammisola, Daulet Izbassarov, Zaheer Ahmed, Metin Muradoglu
15:15 Two-dimensional elasto-inertial coherent structures in viscoelastic channel flow. Rich Kerswell, Jacob Page, Yves Dubief
15:45 Coffee break

17th ETC European Turbulence Conference
Wednesday • September 4th, 2019
Thursday • September 5th, 2019

AULA MAGNA

8:30 Invited speaker • Structures and scalings in natural thermal convection. Olga Shishkina
9:15 Invited speaker • Experimental investigation of turbulence and complex flows. Jerry Westerweel
10:00 Coffee break

ROOM: 1

MULTIPHASE FLOWS • Session 4 • Chair: Caroline Nore • 10:45 - 12:45
10:45 Numerical study of gravity effects on the symmetry and development of particle-laden flows. Matthew Xinchen Zhang, Graham Nathan, Zhao Feng Tian, Ray Cheng Chin
11:00 Modulation of very large scale motions by inertial particles. David Richter, Guiguan Wang
11:30 Cluster of inertial particles and fluid acceleration in turbulence. Sunao Oka, Susumu Goto
11:45 Effects of Stokes number on particle mechanics in a free-shear jet. Ruol Boyodan Cal, Bianca Viggiano, Jeremy Vessaire, Romain Volk, Mickael Bourgoin, Laurent Chevillard
12:00 Exact calculation of energy flux rate in turbulent ferrofluids. Sukhdev Mouraya, Supratik Banerjee
12:30 Sediment transport in a turbulent open-channel with macro-roughness elements. Aurore Naso, Sheikh Muhammad Zubair, Alain Pumir, Emmanuel Lévêque
12:45 Coffee break

MULTIPHASE FLOWS • Session 5 • Room 1 • Chair: Francesco Picano • 14:00 - 18:10
14:00 Inertial effects on the settling and collisions between spheroids in a turbulent flow. Aurora Nasso, Sheikh Muhammad Zubair, Alain Pumir, Emmanuel Lévêque
14:15 Settling of large particles in a turbulence column. Yulia Akutina, Thibaud Revil-Baudard, Julien Chauchat, Olivier Eiff
14:30 Multiscale preferential sweeping of particles settling in turbulence. Jasin Tom, Andrew Bagg
14:45 Effect of turbulence-induced inertial clustering on droplet arrival statistics in a polydisperse droplet field. M. Shyam Kumar, Chakravarthy S. R., Mathur Manikandan
15:00 Effect of mass loading on the collision rate of cloud droplets. Bogdan Rosa
15:15 Results from the Zugspitze experiment: an in-situ cloud-droplet particle-tracking experiment. Guus Bertens, Gholamhossein Bagheri, Haitao Xu, Eberhard Bodenschatz, Jan Molaček
15:30 Accumulation of sedimenting particles in turbulent flows. Alessandro Sozza, Gabor Drotos, Cristobal Lopez, Emilia Hernandez-Garcia
15:45 Lunch

MULTIPHASE FLOWS • Session 6 • Room 1 • Chair: Francesco Picano • 16:15 - 18:10
16:15 Sediment transport in a turbulent open-channel with macro-roughness elements. Michele Travisson, Olivier Eiff, Yulia Akutina
16:30 Homogeneous shear turbulence laden with finite-size spheroidal particles. Ali Yousefi, Mehdi Nazzi Ardakani, Luca Brandt
17:00 Turbulence modulation by inertial particles in a swirling flow. Jérémy Vessaire, Romain Volk, Mickael Bourgoin
17:15 Collapse of turbulence in particle laden channel flow at critical volume loading. Pradeep Muramulla, Viswanathan Kumaram, Partha Sarathi Goswami
17:30 Influence of the quiescent core region on inertial particle dynamics. Yucheng Jie, Helge I. Andersson, Guixiang Cui, Lihao Zhao
17:45 Dense suspensions flowing in channels at moderate Reynolds numbers. Francesco Picano, Pedro Costa, Luca Brandt

ROOM: 3

NON-NEWTONIAN FLOWS • Session 2 • Chair: Carlo Massimo Casciola • 10:45 - 12:15
10:45 Direct Numerical Simulations of turbulent viscoelastic jets described by the FENE-P model. Matheus C. Guimarães, Nuno Pimentel, Fernando T. Pinho, Carlos B. da Silva
11:00 Elastic range scaling in turbulent flow of dilute polymer solution. Yi-Bao Zhang, Haitao Xu, Eberhard Bodenschatz, Hong-Dong Xu
11:30 Mathematical modeling of non-newtonian geophysical flows. Margarita Eglit, Alexander Yakubenko, Julia Zako
11:45 Experimental analysis of coherent structures in non-newtonian power law fluids. Cristian M. Patosi Rosero, Leonardo J. Castellanos Gonzalez, Juliana B. Rodrigues Loureiro, David J. C. Dennis
12:00 Dynamics of elastic chains in turbulent pipe flow. Carlo Massimo Casciola, Francesco Battista, Paolo Guatieri, Jean-Paul Mallicone
12:20 Lunch
17th ETC European Turbulence Conference  
Thursday • September 5th, 2019

**INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS • Session 4 • Room 3 • Chair: Shigeo Kida • 14:00 - 15:45**

14:00 Instability of flow subregions in three-dimensional wake transition. Andrey Alekseyuk, Victor Shkadov
14:15 Buoyancy-suppressed transition in pipe flow. Ashley P. Willis, Elena Manersi
14:30 Linear stability of the far-jet: non-parallel effects. Rustam Malyyedzhanov, Nickolai Yavorsky, Kilian Oberleithner
14:45 Transient dynamics of the turbulent wake of a three-dimensional blunt body. Yann Hoffier, Andreas Spohn, Jacques Bonie, Thomas Castelan
15:00 Stabilisation of vortex shedding flow past a square prism using slip surfaces. K. Aswathy Nair, Abdulvahab Sameen, S. Amilal
15:15 Numerical simulations of counter-current round jets. Kanal Wowrzak, Andzej Baguslawski, Artur Tyliszczak
15:30 Instability of steady flows in a precessing sphere and spheroid. Shigeo Kida
15:45 Coffee break

**INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS • Session 5 • Room 3 • Chair: Laurette S. Tuckerman • 16:15 - 18:15**

16:15 Turbulent drag reduction for a wall with a bump. Jacopo Banchetti, Maurizio Quadrio
16:30 Statistical characterization of viscoelastic flows in extended domains. Alessia Ferrara, Tobias M. Schneider
16:45 Numerical examination of turbulence development in the channel with a small cone angles. Vladimir V. Trifonov, Alexander I. Rashmin, Sergey Kh. Teplovodskii
17:00 Streamwise-constant large-scale structures in Couette and Poiseuille flows. Simon J. Illingworth
17:15 Sensitivity analysis of analytical models for the prediction of trailing-edge noise. Gerardo Zampino, Andrea Ferrera, Renzo Aina
17:30 Experimental investigation of laminar-turbulent transition in supersonic boundary layer on swept wings. Nikolai Samionov, Alexander Kasiov, Vyally Kocham, Tomy Yarnalaw, Alexander Samanov, Boris Smrnoadsky, Aleksey Yurtsik, Alexandre Panina, Gleb Kalosov
17:45 On drag reduction and wake asymmetry of 3D bluff bodies with local base blowing. Luc Pastor, Manuel Lontia-Diez, José Ignacio Jiménez-González, Olivier Cado, Carlos Martínez-Bazán
18:00 Bifurcations in a shear-driven cavity. Laurette S. Tuckerman, Yacine Bangana

**WALL BOUNDED TURBULENCE • Session 5 • Room 5 • Chair: Woutijn Baars • 14:00 - 15:45**

14:00 Interface layers in a plane Couette flow using an embedded LES model. Davide Gatti, Ricardo Vinuesa, Ramis Örlü, Philipp Schlatter
14:15 Toward an understanding of turbulence in a DNS study on Reynolds stress anisotropy in a turbulent boundary layer with separation and reattachment. Hiroyuki Abe
14:30 Experimental investigation of coherent structures in a flat plate turbulent boundary layer at Re=10,000. Christina Voß, Reinhard Geisler, Andreas Schröder, Markus Rütt, Matteo Novara
14:45 Instability of flow subregions in three-dimensional wake transition. Andrey Alekseyuk, Victor Shkadov
15:00 DNS study on Reynolds stress anisotropy in a turbulent boundary layer with separation and reattachment. Hiroyuki Abe
15:15 Embedded Large-Eddy Simulation of streamwise vortices within a spatially developing turbulent boundary layer. Andrew Male, Alistair Reveill
15:30 On drag reduction and wake asymmetry of 3D bluff bodies with local base blowing. Luc Pastor, Manuel Lontia-Diez, José Ignacio Jiménez-González, Olivier Cado, Carlos Martínez-Bazán
15:45 Coffee break
QUANTUM AND SUPERFLUID TURBULENCE • Room 5 • Chair: Davide Proment • 16:15 - 18:15

16:15 Investigation on the occurrence of flight-crash events in turbulent flows of superfluid helium-4.
Marco La Mantia, Petra Hrubcová, Patrik Švančara

16:30 Three-dimensional numerical simulations of two-fluid coupled dynamics in thermal counterflows of superfluid 4He.
Hiromichi Kabayashi, Satoshi Yui, Makoto Tsutoba

16:45 Persistence-time problem in the three-dimensional HVBK model for superfluid turbulence.
Akhilesh Kumar Verma, Vishwanath Shukla, Akshay Bhattacharjee, Rahul Pandit

17:00 Lagrangian study of isothermal turbulence in normal and superfluid helium.
Bertrand Rouxset, Mickael Bourgoin, Dinh Hanh Phan, Mathieu Gilbert, Fatimata Sy

17:15 How well do particles track superfluid vortices? Insights from the Gross-Pitaevskii model.
Umberto Giuriato, Giorgio Krstulovic, Vishwanath Shukla, Sergey Nazarenko

17:30 Quantum Vortex Reconnections: crossover from interaction to driven regimes.
Luca Galantucci, Andrew W. Baggaley, Nick G. Parker, Carlo F. Baranghi

17:45 Interaction between active particles and quantum vortices at low temperatures. Giorgio Krstulovic, Umberto Giuriato

18:00 Flying in a superfluid. Davide Proment, Sashi Musser, Miguel Onorato, William T. M. Irvine

ROOM: 7

COMPRRESSIBLE FLOWS • Session 1 • Chair: Supratik Banerjee • 10:45 - 12:45

10:45 Self-similar compressible turbulent boundary layers with pressure gradients. Part 1: DNS of sub- and supersonic flow.
Christoph Wenzel, Tobias Gis, Markus Kless, Ulrich Rist

11:00 Self-similar compressible turbulent boundary layers with pressure gradients. Part 2: Self-similarity analysis of the outer layer.
Tobias Gis, Christoph Wenzel, Markus Kless, Ulrich Rist

11:15 Detached Eddy Simulation of transverse hydrogen injection into supersonic crossflow. Alexey Trushin, Vladimir Vlasenko, Vladimir Sedelnikov

11:30 Identification of Lagrangian Coherent Structures (LCS) in a flat-plate turbulent boundary layer with adverse pressure gradient.
Matthias Wainschenk, Christoph Wenzel, Ulrich Rist

11:45 Investigation of an unsteady shock wave in a Mach 2 boundary layer. Rui Baidya, Sven Scharowski, Matthew Bros, Christian J. Köhler

12:00 Effect of rarefaction on temporally developing compressible mixing layer. Vishnu Nair, Abdulrahman Almeen, Babji Srinivasan

12:15 Scale energetics in baroclinic-torque-driven turbulent mixing. G. S. Sidharth, Graham Candler

12:30 Energy transfer in compressible magnetohydrodynamic turbulence for self gravitating fluids. Supratik Banerjee, Alexei G. Kritsuk

12:45 Lunch
17th ETC European Turbulence Conference

**ROOM: 9**

**BOUNDARY FREE TURBULENCE** • Session 3 • Chair: Juan Saenz • 10:45 - 12:30

10:45 Permanence of large eddies in variable-density homogeneous turbulence. Olivier Soulard, Jérôme Griffond, Benoît-Joseph Gela, Giovanni Vicicante

11:00 What is a “Length Scale” in variable density turbulence? Dongmei Zhao, Hussein Alouie

11:15 Scale-space turbulence energy density in compressible mixing layer. Abdulrahman Sameen, S. Arun, Balaji Srinivasan, Sharath Ginimaji

11:20 Measuring the full velocity gradient and dissipation rate tensor in homogeneous turbulence using shake-the-box and flowfit. Andreas Schroeder, Daniel Schanz, Sebastian Gesemann, Florian Huhn, Daniel Garaboa Paz, Vicente Pérez-Muñuzuri, Eberhard Bodenschatz

11:45 Unifying local and global descriptions of turbulent entrainment. Maarten van Reeuwijk, J. Christos Vassilicos, John Craske

12:00 Effect of high-order finite difference discretization of the nonlinear term on turbulence statistics. Abdulvahab Sameen, S. Arun, Balaji Srinivasan, Sharath Ginimaji

12:15 Filter-width dependence of the dynamics of homogeneous variable density turbulence. Juan A. Saenz, Denis Aslangil, Daniel Livescu

12:45 Lunch

**INTERMITTENCY AND SCALING** • Session 3 • Room 9 • Chair: Jeremie Bec • 11:00 - 12:45

11:00 Turbulent dissipative anomaly and Lagrangian irreversibility. Jeremie Bec, Simon Thalabard


11:30 Instanton calculus for the onset of turbulent intermittency. Luca Moriconi, Gabriel Brito Acolindrio, Rodrigo Miranda Pereira

11:45 Turbulent dissipative anomaly and Lagrangian irreversibility. Jeremie Bec, Simon Thalabard

11:00 Coffee break

**WAVE TURBULENCE** • Chair: Nicolas Mordant • 10:45 - 12:45

10:45 Turbulence of capillary waves forced by steep gravity waves. Michael Berhanu, Eric Falcon, Luc Devke

11:00 Experience of internal wave turbulence in the Coriolis facility. Clément Savaro, Antoine Campagne, Nicolas Mordant

11:15 Early stage of integrable turbulence in 1D NLS equation: the semi-classical approach to statistics. Giacomo Roberto, Emmanuel Leblond, Pierre Suet

11:30 Coexistence of solitons and extreme events in deep water surface waves. Annette Cazaubiel, Guillaume Michel, Simon Lepot, Benoit Samin, Sébastien Aumaître, Michael Berhanu, Félicien Bonnefoy, Eric Falcon

11:45 On the convergence of the normal form transformation in discrete wave turbulence theory for the Charney-Hassegawa-Mima (CHM) equation. Shane Walsh, Miguel Bustamente

12:00 Mean flow instability of surface gravity waves propagating in a rotating frame. Kannabiran Seshasayanan, Basile Gallet

12:15 Anomalous scaling in gravitational wave turbulence. Sébastien Galtier, Sébastien Aumaître, Michael Berhanu, Félicien Bonnefoy, Eric Falcon

12:30 Integrable turbulence: experimental realization of a soliton gas. Jean Redar, Nicolas Mordant, Eric Barthélémy, Hervé Michallet, Miguel Onorato

12:45 Lunch
17th ETC European Turbulence Conference  
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ROTATING FLOWS • Session 2 • Room 2 • Chair: Geert Brethouwer • 14:00 - 15:45

14:00 Heat transfer and temperature measurements in extreme rapidly rotating convection.  
Matteo Madonia, Jonathan Cheng, Andrés Aguirre Guzmán, Herman Clercx, Rudie Kunnen

14:15 Influence of internal heating on convection in the rotating spherical gap.  
Florian Zaussinger, Christoph Egbers, Vadim Ivannikov, Peter Haufl

14:30 Effects of thermal stratification on the axisymmetric state in spherical Couette flow.  
Takamichi Itano, Taslu Iyigok, Fumitoshi Gotoh, Masako Sugihara-Seki

14:45 Localized structures and solitary states in a vertical Taylor-Couette system with a radial temperature gradient.  
Changwoo Kang, Arnaud Prigent, Innocent Mutabazi

15:00 Transition in rotating plane Couette flow, revisited.  
Masato Nagata, Baofang Song, Damen P. Wall

15:15 Effect of eccentricity in a counter-rotating Taylor-Couette flow.  
Kameswararao Anupindi, Dhaval Paghdar

15:30 Heat transfer in rotating wall-bounded flows.  
Geert Brethouwer

15:45 Coffee break

ROTATING FLOWS • Session 3 • Room 2 • Chair: Stefania Espa • 16:15 - 18:15

16:15 Anisotropy without waves in rotating turbulence.  
Jonathan A. Brons, Alban Potherat, Peter J. Thomas

16:30 On the complex behavior of the lateral wall boundary layer in an experimental co-rotating split-wheel flow.  
Jesús Oscar Rodríguez-García, Javier Burguete

16:45 Instability of steady flow in precessing spheres in a moderate Reynolds-number regime.  
Yasufumi Horimoto, Atsushi Katayama, Susumu Goto

17:00 Does perforation relaminarize turbulent wakes?  
Vaghas D. Narasimhamurthy, Abhinav Singh

17:15 Mean flow generation in rotating annuli with stochastic methods.  
Wenchao Xu, Uwe Harlander

17:30 Dynamics of transition to turbulence in annular vortex breakdown.  
Abdulvahab Sameen, Arjan Weymouth, Vinh-Tan Nguyen, Owen R. Tutty

17:45 Ekmans layer resonance in an ocean-analog rotating tank experiment.  
Joel Sommeria, Miklos Vincze, Nora Fenyvesi, Marten Klein, Samuel Viboud, Yosef Ashkenazy

18:00 Modeling planetary atmospheres and oceans in the laboratory.  
Stefania Espa, Simon Cabanes, Enrico Ferrero, Renato Forza, Boris Galperin, Federica Ivo, Massimiliano Mazzini, Peter L. Reul, Hélène Scolan, Roland Young

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ROOM: 8

VORTEX DYNAMICS AND STRUCTURE FORMATION • Session 1 • Chair: Maurice Rossi • 10:45 - 12:45

10:45 On the geometry of coherent structures in channel flow turbulence.  
Abhishek Parashar, Harkrishnan, Johannes von Lindheim, Nikhil Vora, Konstantin Gritska

11:00 On the energetics of separating and reattaching flows and their modeling.  
Andrea Cimarelli, Adriano Leonforte, Andrea Crivellini, Elisabetta De Angelis, Diego Angeli

11:15 Large-Eddy Simulation of the fluidic oscillator jet.  
Elizaveta Davynguev, Rustam Mulyadzhanov

11:30 Direct Numerical Simulation of variable density starting turbulent jets.  
Vladyslav Ivashchenko, Rustam Mulyadzhanov

11:45 Energy balance quantification and wake morphology description in collocated wind plants.  
Sarah Smith, Hawa Radam, Mike Quigley, Gerard Cortino, Raul Bayoan Cal, Marc Calaf

12:00 Magnetic dissipation of coherent structures and particle deposition in magnetohydrodynamic turbulence at low magnetic Reynolds numbers.  
Bruno Magacho da Silva, Luca Moriconi

12:15 Turbulence dynamics transition of flow past a circular cylinder and the prediction of vortex-induced forces.  
Bernat Font Garcia, Gabriel D. Weymouth, Vinh-Tan Nguyen, Owen R. Tutty

12:30 Motion of helical vortices: a dynamical system approach.  
Maurice Rossi, Ivan Dibende, Can Selcuk

12:45 Lunch

NUMERICAL METHODS AND DATA ANALYSIS • Session 3 • Room 8 • Chair: Patricio Clark De Leoni • 14:00 - 15:45

14:00 Hybrid LES / RANS paradigm for 3D turbulent mixing.  
Filipe Pereira Soares, Fernando F. Grinstein, Dan Israel, Sharath S. Giri

14:15 Spatial hierarchy detection in large scale coherent structures.  
Iiro Ruhn, Jan Jacobs

14:30 Characterization of a hydrodynamic instability from experimental data using stochastic reduced order modeling.  
Monitz Sieber, C. Oliver Paschek, Kilian Oberleithner

14:45 Statistical properties of the filtered turbulence.  
Markus Klein, Christian Kasten, Massimo Grespoli

15:00 Discrete adjoint based data assimilation for large turbulent models.  
Owen Brenner, Patrick Jenny

15:15 Can we derive turbulent closure using lattice gas?  
Vincent Labarre, Bérangère Dubrulle, Didier Paillard

15:30 Synchronizing turbulence via nudging.  
Patricio Clark De Leoni, Andrea Mazzino, Luca Biferale

15:45 Coffee break
NUMERICAL METHODS AND DATA ANALYSIS • Session 4 • Room 8 • Chair: Fernando Grinstein • 16:15 - 18:15

16:15 Aero-optical investigation on turbulent mixing flow by high-order algorithm. Sun Xi Wan, Liv Wei, Li Da Li, Wong Dong Fang
16:30 Parallel 2D and 3D numerical simulations of melting with convection. Georges Sadaka, Ionut Danaila, Cevenlin Lothe, Francy Lüddens, Aina Rakotonandrindo, Pierre-Henri Tournier
17:00 A new alternating direction forcing immersed boundary method for high-fidelity simulations of a moving object in a fluid. Athanasios E. Giammas, Sylvain Laizet
17:15 Numerical scheme for a Lagrangian stochastic model describing rods orientation. Lorenzo Campana, Miniline Bossy, Jean Pierre Minier
17:30 Direct simulation of turbulent plumes in a crossflow. Owen H. Jordan, Maarten van Reeuwijk, Ben Devenish, Gabriel Rooney
17:45 Flow reconstruction using thermal wall imprints. Md. Rakib Hossain, John Craske, Maarten Van Reeuwijk
18:00 Dynamic bridging modeling for coarse grained simulations of shock driven turbulent mixing. Fernando F. Grinstein, Juan A. Saenz, Rick M. Rauenzahn, Massimo Germano

ROOM: 10

TWO-DIMENSIONAL TURBULENCE • Session 2 • Chair: Michael Shats • 10:45 - 12:30

10:45 Lagrangian pair dispersion in generalized two-dimensional turbulence. Stefano Bert, Alexis Foussard, Xavier Perrot, Guillaume Lapaye
11:00 The decay of two-dimensional turbulence in soap-film flows. Zuyu Zhou, Haidao Xu
11:15 Energy flux vector in a shell model of 2D rotating turbulence. Masanari Takeoka, Naoto Yosoyama, Eichi Sasaki
11:30 Sudden transition from non-swirling to swirling axisymmetric turbulence. Wouter J. E. Bos, Jozef Qin, Aurane Nasa
11:45 Mixing efficiency of laminar and turbulent wall-bounded flows. Kai Schneider, Benjamin Kadoch, Wouter J. E. Bos
12:00 Do shear layers spontaneously trigger turbulence? Alexei A. Marilybave, Simon Thalabode, Jeremie Bec
12:15 Nonlinear evolution of a baroclinic wave and imbalanced dissipation. William Riley Casper, Bala Nadiga
12:30 Inertial and anisotropic particles in 2D turbulence. Michael Shats, Nicolas Francois, Hua Xia, Jia Yang, Harst Punzmann
12:45 Lunch

TRANSPORT AND MIXING • Session 3 • Room 10 • Chair: Patrice Le Gal • 14:00 - 15:45

14:00 Self-similarity of scalar spectra in a point-source plume released in a turbulent boundary layer. Kapil A. Chauhan, Krishna M. Talluru
14:15 Multi-scalar mixing in a coaxial jet at different velocity ratios. Alais Hewes, Laurent Mydlarski
14:30 Non-Richardson turbulent particle pair diffusion. Nadeem A. Malik, Syed M. Usama
14:45 Direct Numerical Simulations of combined Rayleigh-Taylor/shear flow to late times. Jan Boltze, Daniel Livescu
15:00 Small Peclet-small Mach number approximation and its implications on statistical turbulence models. Jean-Cedric Chkair, Olivier Soulard, Jerome Griffond, Xavier Blanc
15:15 The role of turbulence on the development and entrainment of a turbulent jet in cross-flow. Graham Freedland, Grace Eliesor, Stephen Solovitz, Raul Bayon Cal
15:30 Fragmentation of large aggregates in turbulence. Patrice Le Gal, Hector M. De La Rosa Zambrano, Christophe Brouzet, Gautier Verhille
15:45 Coffee break

GEOPHYSICAL AND ASTROPHYSICAL TURBULENCE • Session 1 • Room 10 • Chair: Hussein Aluie • 16:15 - 18:15

16:15 Effects of droplet sedimentation and wind shear on cloud-top entrainment. Bernhard Scholz, Juan Pedro Mellado
16:30 Scale invariant diffusion parameterization in a mechanistic general circulation model. Senhat Can, Urs Schaffer-Rohfels, Erich Becker
16:45 Fractal reconstruction of sub-grid scales for particle dispersion in Large-Eddy Simulation. Emmanuel O. Akinlabi, Marta Wacławczyk, Szymon P. Malinowski, Juan-Pedro Mellado
17:00 Reactive species in turbulence. Wenwei Wu, Lipo Wang, Enrica Calzavarini, Francois G. Schmitt, Michael Gauding
17:15 Pair dispersion in canopy flow turbulence. Ron Shnap, Yarden Bohbott-Raviv, Eyal Fattal, Alex Liberzon
17:30 Analysis of the turbulent energy spectra obtained during the WADIS-2 sounding rocket campaign. Victor Aversianov, Boris Snelnikov
17:45 Unravelling wave-vortex interactions and geophysical turbulence phenomenology at oceanic mesoscales. Jim Thomas
18:00 Toward understanding the multi-scale coupling in global oceanic flows. Hussein Aluie, Mahmoud Sadek, Chayot Teeratrakul, Matthew Hecht, Geoffrey Vallis
17th ETC European Turbulence Conference

ROOM: 4

Minisymposium

TURBULENCE IN THE HELIOSPHERE AND IN THE LOCAL INTERSTELLAR MEDIUM

Convener: Daniela Tordella • Co-convenor: Federico Fraternale • Session 1 • Chair: D. Tordella • 14:00 - 15:45

14:00 Observing solar wind turbulence from fluid to kinetic scales.
R. Bruno

14:25 Turbulence and dissipation in the solar wind.
S. Galtier

14:50 Simulating solar wind dynamics across scales: the expanding box model.
M. E. Innocenti, A. Tenerani, M. Velli

15:15 Generation of coherent structures in mhd and space plasmas: Reynolds number and system size effects.
W. H. Matthaeus, T. Parashar, M. Won, M. Cuesta, A. Chasapis, R. Bandopadhayay, R. Chhiber, Y. Yang

ROOM: 1

Minisymposium

TURBULENCE IN THE HELIOSPHERE AND IN THE LOCAL INTERSTELLAR MEDIUM

Convener: Daniela Tordella • Co-convenor: Federico Fraternale • Session 2 • Chair: N. V. Pogorelov • 16:15 - 18:00

16:15 Turbulence and instabilities at the heliospheric interface.
N. V. Pogorelov, F. Fraternale, M. Gedalin, J. Heerikhuisen, T. K. Kim, V. Raytchev, M. Zhang

16:40 Voyager data from the heliosheath and interstellar medium.
J. Richardson, J. Belcher

17:05 Statistical properties of a local energy transfer proxy in space plasmas.
L. Sorriso Valvo

Friday • September 6th, 2019

AULA MAGNA

8:30 Invited speaker • Turbulent channel flow laden with finite-size particles. Luca Brandt

9:15 Invited speaker • Turbulent boundary layers developing over rough surfaces: from the laboratory to full-scale systems. Nicholas Hutchins

10:00 Coffee break

MULTIPHASE FLOWS • Session 7 • Chair: Paolo Gualtieri • 10:45 - 12:30

10:45 Particle distribution in a turbulent rough wall pipe. Leon Chan, Tony Zahtila, Jimmy Philip, Andrew Ooi

11:00 Creation of turbulent puff in pipe flow with microbubble suspension. Kataro Nakamura, Hyun Jin Park, Yuji Tasaka, Yuichi Murai

11:15 Wall-bounded turbulent flows: particles near surfaces. Christophe Henry

11:30 Transition to turbulence in core-annular pipe flow. Carlos Plana, Baofang Song, Marc Avila

11:45 Investigation of interfacial forces in CFD simulation of turbulent bubbly pipe flows.
Mohsen Shiea, Marco Vanni, Daniele Marchisio, Antonio Buffo

12:00 Fluid/particle momentum coupling in turbulent jets. Francesco Battista, Paolo Gualtieri, Jean-Paul Mollicone, Carlo Massimo Casciola

12:15 The exact regularised point particle method for wall turbulence modulation.
Paolo Gualtieri, Francesco Battista, Jean-Paul Mollicone, Carlo Massimo Casciola

12:30 Lunch / Young Investigators Awards Ceremony

MULTIPHASE FLOWS • Session 8 • Room 1 • Chair: Jacek Pazorski • 14:00 - 15:45

14:00 DNS and modelling dynamics of inertial particles in the under-resolved shear turbulence. Alexis Barge, Mikhail Gorokhovski

14:15 Numerical analysis of fully resolved ellipsoidal particle dynamics in isotropic decaying turbulence.
Konstantin Fröhlich, Lennart Schneiders, Matthias Meinke, Wolfgang Schröder

14:30 Direct Numerical Simulations of heat transfer in fluidized beds of spherical particles.
Mehdi Niazi Ardekani, Christophe Dowig, Luca Brandt
17th ETC European Turbulence Conference
Friday • September 6th, 2019

14:45  Momentum and heat transport in multiphase natural convection. Chong Shen Ng, Roberto Verzicco, Detlef Lohse

15:00  Scaling parameters of subaqueous sediment bedforms in turbulent open channel flow. Markus Scherer, Aman Ghebremichael Kidanemariam, Markus Uhmann

15:15  Assessment of structural-type subfilter models for particle-laden Large-Eddy Simulations. Jacek Pozorski, Maria Knorps, Bogdan Rosa

ROOM: 3

INSTABILITY, TRANSITION AND CONTROL OF TURBULENT FLOWS • Session 6 • Chair: Federico Fraternale • 10:45 - 12:30

10:45  Transfer functions for flow predictions in wall-bounded turbulence. Kenzo Sasaki, Ricardo Vinuesa, André V. G. Cavaliere, Philipp Schlatter, Dan S. Henningson

11:00  Identification of the pattern of breakdown based on binary sequence statistics and cellular-automaton simulations. Wen Zhang, Hao Guo, Peiqing Liu, Minping Wan, Jianchun Wang, Shiyi Chen

11:15  An input-output approach to evaluating flow response to spatially varying actuator geometries. Igal Gluzman, Dianne F. Gayme

11:30  Adjoint sensitivity of turbulence using unstable invariant solutions. Davide Laugna

11:45  Active flow control of the logarithmic layer. Anna Gussova, Miguel P. Encinar, Javier Jiménez

12:00  Mean DNS adjoint solutions of turbulent Navier-Stokes flows. Sophie Knechtel, Joern Sesterhenn

12:15  Reinforcement learning versus linear control of Rayleigh-Bénard convection. Takuto Ogawa, Kengo Asada, Toshihaki Tsuchida, Kazu Fujii

12:30  Lunch / Young Investigators Awards Ceremony

14:00  Multi-point velocity measurements in grid turbulence interacted with a spherical shock wave. Ciro S. Campolina, Alexei Mailybaev

14:15  Extension of the one-dimensional turbulence model towards electrohydrodynamic variable density flows. Alfredo Pinelli, Mohammad Omidiyeganeh, Alessandro Monti

14:30  The effect of turbulence on the near-field of porous disks. Magnus Kyrkjebø Vinnes, Hauk-Morten Heimlund Lykke, R. Jason Hearst

14:45  Modifying spatial large-scales using blowing perturbations. Venkatesh Pullencherry, Surangka Dharmaratne, Murat Turkus, Luciano Castillo

15:00  On turbulence and wave energy converters. Frederic Dias, Joao Bettencourt

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ROOM: 5

FLUID-STRUCTURE INTERACTION • Session 1 • Chair: Olivier Cadot • 10:45 - 12:30

10:45  Large-Eddy Simulation of sparse and dense rigid canopy regimes. Alfredo Pinelli, Mohammad Omidiyeganeh, Alessandro Monti

11:00  Comparison of Large-Eddy Simulations and wind tunnel experiments of flow above rough surfaces. Andrea Ferrero, Francesco Larocca, Giulio Cossu, Massimo Gerotto

11:15  A numerical study of the spanwise turbulence past a cylinder flow. Andrea Ferrero, Francesco Larocca, Giulio Cossu, Massimo Gerotto

11:30  Analysis of transient flows over a NACA0015 airfoil toward better flow control authority of plasma actuators. Takuto Ogawa, Kengo Asada, Toshihaki Tsuchida, Kazu Fujii

11:45  Bistability of a pendulum in a flow. Ariane Gaybout, Nicolas Pithon, Martin Obligado, Mickaël Bourquin

12:00  Simulation of thin & long flexible objects in a turbulent flow. Daniel Meyer, Marco Hostettler

12:15  Turbulent wake of a freely rotating disk in a uniform flow: experiments and stochastic modelling. Olivier Cadot, Edouard Boujo

12:30  Lunch / Young Investigators Awards Ceremony

14:00  On the dynamics of multiple elastically-bounded flapping plates for flow energy harvesting. Stefano Olivieri, Corrado Barogna, Roberto Verzicco, Andrea Mazzino

14:15  Modelling dynamic stall of a pitching airfoil in large-scale freestream turbulence. ThankGod Boye, Zheng-Tong Xie

14:30  The effect of turbulence on the near-field of porous disks. Magnus Kyrkjebø Vinnes, Hauk-Morten Heimlund Lykke, R. Jason Hearst

14:45  Modifying spatial large-scales using blowing perturbations. Venkatesh Pullencherry, Surangka Dharmaratne, Murat Turkus, Luciano Castillo

15:00  On turbulence and wave energy converters. Frederic Dias, Joao Bettencourt

ROOM: 7

COMPRESSIBLE FLOWS • Session 2 • Chair: Aleksey Yatskikh • 10:45 - 12:45

10:45  Multi-point velocity measurements in grid turbulence interacted with a spherical shock wave. Kento Inokuma, Tomaoki Watanabe, Koji Nagato, Yasuhiko Sakai
11:00 Direct Numerical Simulations on effects of turbulent Mach number in interaction between planar shock wave and turbulence.  
Kento Tanaka, Tomaoki Watanabe, Koji Agata

11:15 Reynolds and Mach number effects on the skin-friction decomposition in turbulent boundary layers.  
Yitong Fan, Weipeng Li, Sergio Pirozzoli

11:30 Direct Numerical Simulation of a BZT dense gas compressible shear layer.  
Aurélien Vadrot

11:45 An LES investigation of high-speed turbulent gas jets. Francesco Bonelli, Annamite Viggorino, Vinicio Magi

12:00 Turbulent inlet effects on the cooling efficiency of an impinging jet. A compressible DNS study. Gabriele Camerlengoa, Jön Sesterhenn

12:15 A comparative study of Richtmyer-Meshkov instability and turbulent mixing. Ping Li, Tao Wang, Bing Wang, Jianyu Lin, Jingsang Bai

12:30 Hot-wire measurements of the evolution of total temperature and mass flow fluctuations in 2D and 3D supersonic boundary layers.  
Aleksey Yatskikh, Alexander Kosinov, Nikolay Semionov, Yury Yermolaev, Gleb Kalasov, Vasily Kocharyn

12:45 Lunch / Young Investigators Awards Ceremony

TURBULENT CONVECTION • Session 6 • Room 7 • Chair: Yuji Tasaka • 14:00 - 15:45

14:00 Large-scale coherence of turbulent superstructures in Rayleigh-Bénard convection.  
Dominik Kug, Roberto Verzicco, Detlef Lohse, Richard J. A. M. Stevens

14:15 Resolved energy budget of superstructures in Rayleigh-Bénard convection.  
Genit Green, Dimitar Vlaykov, Juan-Pedro Mallioda, Michael Wilczek

14:30 POD analysis and modelling of large-scale reorientations in a cubic Rayleigh-Bénard cell.  
Benedicte Poirain, Laurent Sauvoise, Philippe Riviere, Anouar Saoudini

14:45 Vortex formation during spin-up of thermal convection. Daisuke Noto, Yuji Tasaka, Taketoshi Yanagisawa, Yushi Murai

15:00 Slip length effect on heat transfer and temperature profiles in turbulent Rayleigh-Bénard convection.  
Meajng Huang, Yin Wang, Yun Bao, Xiaozhou He

15:15 Saritory turbulent plumes in steadily-heated flow of 2D Boussinesq model. Yoshiki Hirata, Sadayoshi Toh

15:30 Development of turbulent cellular structures in Rayleigh-Bénard convection in a finite liquid metal layer.  
Yuji Tasaka, Megumi Akashi, Taketoshi Yanagisawa, Tobias Vogt, Sven Eckert

ROOM: 9

INTERMITTENCY AND SCALING • Session 4 • Chair: Takeshi Matsumoto • 10:45 - 12:30

10:45 On the stochastic modeling of the spatio-temporal structure of homogeneous and isotropic turbulence.  
Jason Renouve, Laurent Chevillard

11:00 Experimental study of inertial intermittency using Fokker-Planck equation in von Karman cryogenic turbulent flows.  
Swapnil Kharche, Alain Girard, Joachim Peinke, André Fuchs, Bernard Roussel, Michel Bon-Mardian, Jean-Paul Maron, Christophe Baudet

11:15 Energy budget in wall-bounded turbulent flows. Rakesh Yavavaj, Jean-Marc Foucart, Jean-Philippe Laval, Christos Vassilicos

11:30 Energy transfer in Rayleigh-Bénard cell. David Dautant, Bénédicte Dubrulle, Olivier Lot, Julien Sololt, Francesca Chilli

11:45 Extracting the spectrum by spatial filtering. Mahmoud Sadek, Hussein Aioie

12:00 Projection method for the analysis of small-scale intermittency in hydrodynamic turbulence.  
Jan Friedrich, Holger Hamann, Rainer Grauer

12:15 Bolygano-Obukhov scaling in Rayleigh-Taylor turbulence at moderate Atwood number. Takeshi Matsumoto

12:30 Lunch / Young Investigators Awards Ceremony

INTERMITTENCY AND SCALING • Session 5 • Room 9 • Chair: Andrea Mazzino • 14:00 - 15:30

14:00 Weak formulation and scalings in turbulent Rayleigh-Bénard convection.  
Sergio Chiibaro, Bénédicte Dubrulle, Alessio Innocenti, Valentino Valori

14:15 Energy flux vectors in anisotropic turbulence. Neato Yokoyama, Masanori Takasaki

14:30 Large-scale transitions in fully developed turbulence. Cristian C. Lalescu, Michael Wilczek

14:45 Internal and external fluctuations in a turbulent non-premixed planar flame.  
Michael Gauding, Dominik Denker, Yacine Brahami, Emilien Varea, Luminita Danaila

15:00 Flowing fibers as a proxy of two-point statistics of turbulence.  
Andrea Mazzino, Marco Edoardo Rosti, Stefano Olivieri, Luca Brandt

ROOM: 2

STRATIFIED FLOWS • Session 3 • Chair: Luca Mortarini • 10:45 - 12:45

10:45 Layering and vertical transport in sheared double diffusive convection in the diffusive regime.  
Yantao Yang, Roberto Verzicco, Detlef Lohse, Colm-Cille P. Caulfield

11:00 Internal gravity waves, shear, and mixing in forced stratified turbulence. Christopher Howland, John Taylor, Colm-cille P. Caulfield

11:15 Turbulent mixing driven by the Faraday instability. Antoine Briard, Benoît-Joseph Gréa, Louis Gostiaux

11:30 Vertical drafts and mixing in stratified turbulent flows.  
Fabio Feraco, Raffaele Marino, Alain Pumir, Leonardo Primavera, Pablo D. Mininni, Annick Pouquet, Duane Rosenberg
10:45 - 12:45 
**NUMERICAL METHODS AND DATA ANALYSIS**  
- Session 5 • Room 8 • Chair: Alessandro Corbetta • 14:00 - 15:15

14:00 
Numerical analysis of the heat transfer of a nano-fluid immersed in a porous medium inside a central tower-type solar receiver. 
**Agustín Mora, María Belén Acea, Martín Solazur, Oscar Lopez, Adolfo Rene Comrea**

14:15 
Direct measurement of vorticity in transitional to turbulent flow. Markus J. Schmidt, Thomas Roeggen

14:30 
3D Lagrangian particle tracking with multi-pulse shake-the-box in turbulent boundary layer flows at high Reynolds numbers. 
**Agustin Mora, Maria Belem Arce, Martin Salazar, Oscar Lopez, Adolfo Rene Comrea**

14:45 
Deep learning of turbulent velocity signals. 
**Markus J. Schmidt, Thomas Roeggen**

15:00 
3D Numerical simulation of the turbulent flow inside a porous medium. 
**Markus J. Schmidt, Thomas Roeggen**

15:15 
Turbulence measurements in an open channel with a new ADV profiler. 
**Marie Burckbuchler, Stéphane Fischer**

15:30 
3D Lagrangian particle tracking with multi-pulse shake-the-box in turbulent boundary layer flows at high Reynolds numbers. 
**Agustin Mora, Maria Belem Arce, Martin Salazar, Oscar Lopez, Adolfo Rene Comrea**

**ROOM: 10**

**GEOPHYSICAL AND ASTROPHYSICAL TURBULENCE**  
- Session 2 • Chair: Nobumitsu Yokoi • 10:45 - 12:30

10:45 
Waving perturbation of outlying sheets and core of molecular clouds in head-on collision. 
**Valery Goryachev, Boris Rybakin**

11:00 
Bridging the turbulent vortex dynamo theory and tropical cyclone investigations. 
**Galinia Levina**

11:15 
Statistics of extreme convective penetration in stellar interiors. 
**Dimitar Vlaykov, Isabelle Baraffe, Jane Pratt**

11:30 
Rocket-borne turbulence measurements in mesosphere/lower thermosphere region. 
**Boris Strelnikov, Franz-Josef Lübken, Victor Avsarkisov**

11:45 
Development of turbulence and clouds under strong wind jet in atmospheric boundary layers; Large-Eddy Simulations. 
**Metodija Mato Shpakalkievski, Vera Schumann, Daisuke Sakurai, Nikki Vercauteren**
12:00 Potential vorticity, helicity, and vortex structures in the atmospheric boundary layer.
Otto Chkhetiani, Boris Koprov, Victor Koprov, Michael Kurgansky, Egor Shishov, Valery Kramar

Moein Mohammadi, Szymon Malinowski, Marta Wacławczyk, Yong-Feng Ma, Jesper Pedersen

12:30 Turbulence transport modelling in core-collapsed supernovae explosion.
Nobumitsu Yokoi, Tomoya Takiwaki, Youhei Masada

12:45 Lunch / Young Investigators Awards Ceremony

TRANSPORT AND MIXING • Session 4 • Room 10 • Chair: Dario Vincenzi • 14:00 - 15:30

14:00 Nearfield flow establishment in a pure coherent shear source turbulent flow tunnel.
Anoop Mohan Vijaya, N. R. Panchapakesan

Michel Orsi, Fabio Feraco, Massimo Marino, Maurizio Boffadossi, Duane Rosenberg, Raffaele Marino, Pietro Salizzoni

14:30 Lagrangian mixing in wall-bounded turbulence: a network perspective.
Giovanni Iacobello, Stefania Scarsoglio, Hans Kuerten, Luca Ridolfi

14:45 Towards a simple mixing model for passive scalar transport using Hierarchical Parcel Swapping (HiPS).
Tommy Starick, David O. Lignell, Heiko Schmidt

15:00 Entrainment in non-Boussinesq jets.
Mathieu Creyssels, Samuel Vaux, John Creske, Maarten van Reeuwijk, Pietro Salizzoni

15:15 Closure theory for particle clustering in turbulence.
Takeo Aoki, Kyo Yoshida, Keigo Matsuda, Katsunori Yoshimatsu

15:30 Effects of grid resolution, source size and source elevation on large eddy simulation of plume dispersion in an infinite-Re neutral boundary layer.
Hamidreza Ardeshiri, Massimo Cassiani, Soon-Young Park, Andreas Stohl, Kerstin Stebel, Ignacio Piso, Anna Salvia, Arve Kylling, Norbert Schmidbauer

15:45 Preferential sampling of elastic chains in turbulent flows.
Dario Vincenzi, Jason R. Picardo, Nainta Pal, Samriddhi Sankar Roy