

**Summer School 26<sup>th</sup> July -5<sup>th</sup> August 2016**  
**ADVANCES IN GEOPHYSICAL**  
**AND ASTROPHYSICAL TURBULENCE**

**Monday 25<sup>th</sup> July – Arrival of the Participants**

**Tuesday 26<sup>th</sup> July : Basis, wave and climate**

**8h40** - 9h00 : Welcome and Information of the institute of Cargèse.  
9h00 – 10h00 : **Hélène Politano** : Hydro & MagnetoHydro-Dynamic Turbulence 1  
10h00 -10h30 : Coffee break  
10h30 -11h30 : **Sergey Nazarenko** : Wave Turbulence and Beyond 1  
11h30 -12h30 : **Leslie Smith** : Multi-scale Modeling in Geophysical Systems and Climate 1  
12h30 -lunch  
  
15h30 – 16h00 : Drinks and fruits  
**16h00** – 17h00 : **Sergey Nazarenko** : Wave Turbulence and Beyond 2  
17h00 - 18h00 : **Leslie Smith** : Multi-scale Modeling in Geophysical Systems and Climate 2  
18h00 – 19h15 : Break  
18h15 - 19h00 : **Rahul Pandit**: Cahn-Hilliard-Navier-Stokes Turbulence

**19h00 :Welcome Party (at the institute)**

**Wednesday 27<sup>th</sup> July : Transport and super-fluid**

**9h00** -10h00 : **Jéremie Bec** : Transport and mixing 1  
10h00 -10h30 : Coffee break  
10h30 -11h30 : **M. Brachet** : Turbulence superfluid 1  
11h30 - 12h00 : **Giorgio Krstulovic** : Evolution of a superfluid vortex filament tangle  
12h00 – 12h30 : **Villois Alberto** : (Non)-universality of vortex reconnections.  
12h30 -lunch  
  
15h30 – 16h00 : Drinks and fruits  
**16h00** – 17h00 **Jéremie Bec** : Transport and mixing 2  
17h00 – 18h00 : **M. Brachet** : Turbulence superfluid 2  
18h00 – 18h15 Break  
18h15 – 19h00 **Alain Pumir** : Particle motion and irreversibility in turbulence

**Thursday 28<sup>th</sup> July : MHD, Dynamo and Astro**

**9h00** -10h00 : **Hélène Politano** : Hydro & MagnetoHydro-Dynamic Turbulence 2  
10h00 -10h30 : Coffee break  
10h30- 11h30 : **Edith Falgarone** : Turbulence in the InterStellar medium 1  
11h30- 12h30 : **Caroline Nore** : Numerical Dynamo 1  
12h30 -lunch  
  
15h30 -16h00 : Drinks and fruits  
**16h00** -17h00 **Edith Falgarone** : Turbulence in the InterStellar medium 2  
17h00 – 18h00 : **Caroline Nore** : Numerical Dynamo 2  
18h00 – 18h15 Break  
18h15 – 19h00 : **Fabian Waleffe** : Optimum coherent transport in Rayleigh-Bénard convection

**19h30 : Barbecue (at the Institute)**

## Friday 29<sup>th</sup> July : Plasmas

**9h00** -10h00 : **Thierry Passot** : Fluid Plasmas : Landau Fluids 1

10h00 -10h30 : Coffee break

10h30 – 11h15 : **Nicolas Plihon** : Towards a von-Karman plasma experiment

11h15 – 11h45 : **Andres Nahuel** : von Kármán-Howarth equation for 3D full two-fluid plasma

11h45 – 12h15 : **Valeria Shumaylova** : Transition from large- to small-scale dynamo in boxes of large aspect-ratio

12h30 - lunch

15h30 - 16h00 : Drinks and fruits

**16h00** -17h00 : **Thierry Passot** : Fluid Plasmas : Landau Fluids 2

17h00 -17h15 : Break

17h15 – 18h00 : **Ludovic Petitmange** : Dynamo bifurcations in the different dynamical regimes obtained in geodynamo simulations

18h00 -18h30 : **Alexandre Cameron** : Large scale instabilities in 3D helical flows

**19h00 : Drinks and foods : Posters Sessions or discussions**

## Saturday 30<sup>th</sup> July : Morning Talks (Waves and Transport)

**9h00** - 9h30 : **Roumaissa Hassaini** : Finite-size effects in gravity-capillary wave turbulence

9h30 – 10h00 : **Alessandro Sozza** : Confinement and Clustering of Floaters on Isopycnal Surfaces

10h00 -10h30 : Coffee break

10h30 – 11h00 : **François Laenen** : Turbulence modulation by heavy particles

11h00 – 11h30 : **Cayla Dean** : Biomixing due to diel vertical migrations of zooplankton :  
Comparison of computational fluid dynamics model with observations.

11h30 -12h00 : **Marino Raffaele** : Characterization of the dual energy cascade in rotating stratified geophysical flows.

12h00 -12h30: **Ewe Wei Saw** : Experimental characterization of possible non-viscous energy dissipation in a turbulent flow.

12h30 - lunch

## Monday 1<sup>st</sup> August : Models in Turbulence

**9h00** -10h00 : **Bèrèngère Dubrulle** : Theoretical modeling 1

10h00 -10h30 : Coffee break

10h30 – 11h30 : **François Daviaud** : Low Dimensional model in Turbulence

11h30 -12h00 : **Vassilios Dallas** : Large scale statistical equilibria in helical turbulence

12h00 – 12h30 : **Vishwanath Shukla** : Statistical theory of reversals in two-dimensional confined turbulent flows.

12h30 -lunch

**14h00** -15h00 : **Bèrèngère Dubrulle** : Theoretical modeling 2

5h00 – 15h15 : Break

15h15 - 16h00 : **Alain Noullez** : Homogeneity and Isotropy of the Taylor-Green Vortex: The Fate of the Kolmogorov and Yaglom Relations

16h00 - 16h15 : Drinks and fruits

## Tuesday 2<sup>st</sup> August : Rotation and Stratification

**9h00** – 10h00 : **Pablo Minnini** : Rotating turbulence 1

10h00 -10h30 : Coffee break

10h30 – 11h30 : **Annick Pouquet** : Turbulence regimes in Rotation and Stratification 1

11h30 – 12h15 : **Vladimir Zeitlin** : On the dynamical nature of Saturn's North Pole hexagon

12h30 Lunch

**14h00** -15h00 : **Pablo Minnini** : Rotating turbulence 2

15h00 – 15h15 : Break

15h15 – 16h15 : **Annick Pouquet** : Turbulence regimes in Rotation and Stratification 2

16h15 - 16h30 : Drinks and fruits

**19h00** : **Conférence grand public (in french) pour les habitants de Cargèse et les scientifique qui souhaitent venir.**

**Yannick Ponty** : «De la boussole aux taches solaires, le champ magnétique dans tous ses états»

## Wednesday 3<sup>st</sup> August : Plasmas and Solar Wind

**9h00** - 10h00 : **Sébastien Galtier** : Hall/Electron MHD Turbulence 1

10h00 -10h30 : Coffee break

10h30 - 11h30 : **Olga Alexandrova** : Solar wind turbulence : coherent structures or waves ? 1

11h30 -12h00 : **Louis Amard** : Anisotropic turbulence in stellar radiative regions

12h00 Lunch

**14h00** -15h00 : **Sébastien Galtier** : Hall/Electron MHD Turbulence 2

15h00 – 15h15 : Break

15h15 – 16h15 : **Olga Alexandrova** : Solar wind turbulence : coherent structures or waves ? 2

16h15 - 16h30 : Drinks and fruits

## Thursday 4<sup>th</sup> August :

**9h00** – 10h00 : **Yannick Ponty** : Spectral methods, parallelization and environment tools  
(Subversion, Trac, 3D Graphics, Python ... ) 1

10h00 -10h30 : Coffee break

10h30 – 11h30 : **Jean-François Pinton** : A point-vortex toy model

11h30 – 12h00 : **Raphael Raynaud** : Convective dynamos: symmetries and modulation

12h00 – 12h30 : **Elisa De Giorgio** : Study of Coherent Structure Formation in 2D MHD  
Turbulence

12h30 Lunch

A point-vortex toy model

**14h00** - 15h00 : **Yannick Ponty** : Spectral methods, parallelization and environment tools  
(Subversion, Trac, 3D Graphics, Python ... ) 2

15h00 – 15h30 : Drinks and fruits

## Friday 5<sup>th</sup> August : Morning Talks ( HD and MHD )

**9h00** - 9h30 : **Ganapati Sahoo** : Effects of helicity in magnetohydrodynamic turbulence

9h30 – 10h00 : **Xiang Fan** : Cascades and Spectra of Turbulence in Spinodal Decomposition

10h00 -10h30 : Coffee break

10h30 – 11h00 : **Nicolas Cornuault** : A possible disruption of accreting filamentary streams in  
galactic halos.

11h00 - 11h30 : **YueKin Tsang** : Effects of a guided-field on particle diffusion in  
magnetohydrodynamic Turbulence

11h30 -12h00 : **Alexander Soloviev** : Magnetic Signatures of Fine-scale Processes in the Ocean  
Surface Layer

12h00 - lunch

----- End of the school -----

## Drink and food : Posters Sessions or Discussion Friday 29<sup>th</sup> July

**Roumaissa Hassaini** : Finite-size effects in gravity-capillary wave turbulence

**Jonathan Skipp** : Bose-Einstein condensation in fusion plasmas and planetary atmospheres ?

**Nick Bell** : Wave turbulence in rotating MHD

**Yue-Kin Tsang** : An energy-entropy method for nonlinear stability in two-dimensional  
hydrodynamics

**Yue-Kin Tsang** : Impact of changes in the Hadley circulation on regional rainfall

**Cayla Dean** : Numerical simulation of diel vertical migration of zooplankton in oil emulsions and  
freshwater lenses

**Cayla Dean** : 3D dynamics of the near-surface layer of the ocean in the presence of freshwater  
influx

**Alexander Soloviev** : “Surface dynamics of crude and weathered oil in the presence of dispersants:  
Laboratory experiment and numerical simulation